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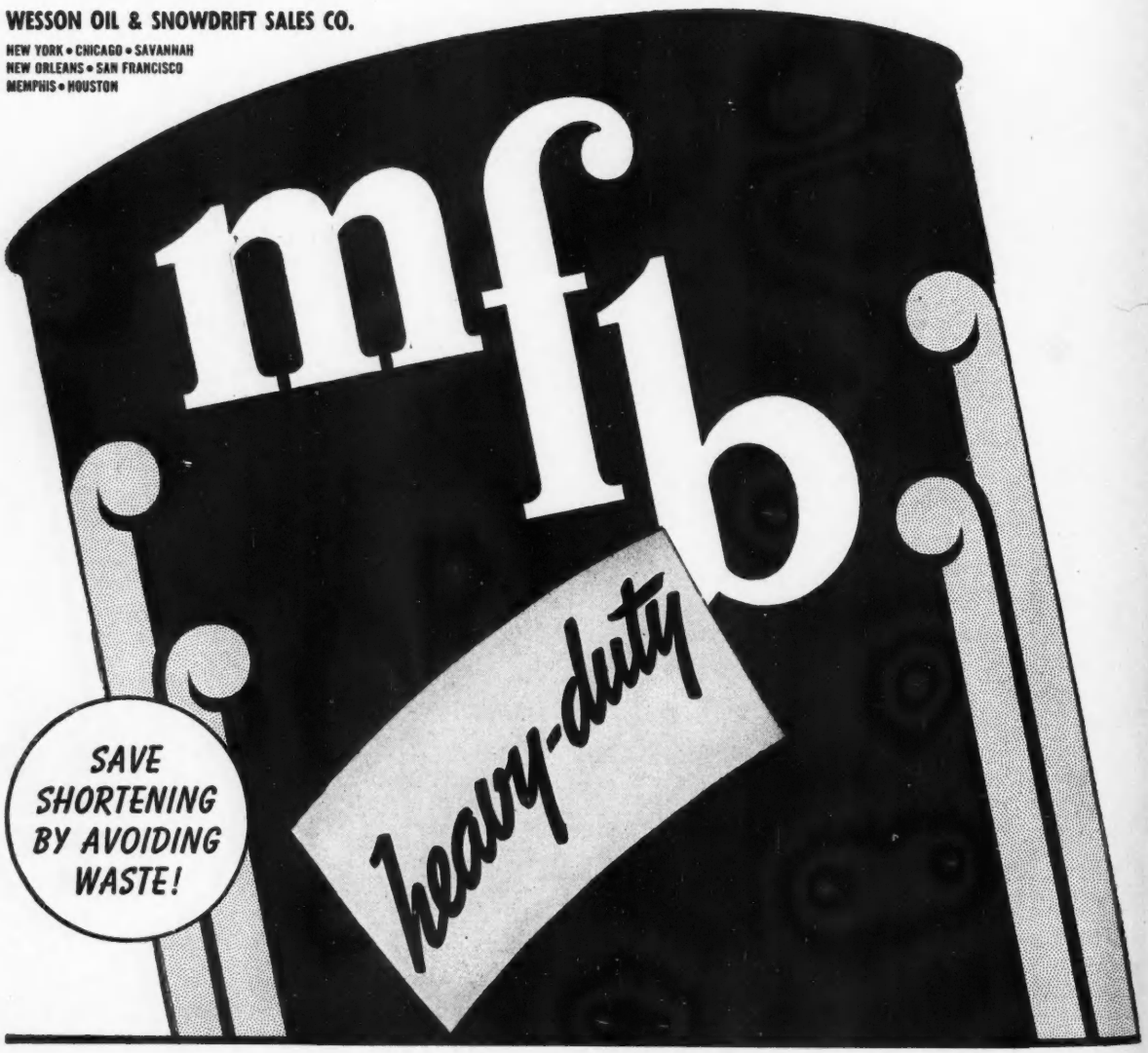

CHOLESTEROL CONTENT OF FOODS[1]

RUTH OKEY

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ANALYSES of foods undertaken for the specific purpose of determining cholesterol content have been relatively few. What data are available, for the most part, have been accumulated incidentally during investigations which have required isolation or determination of the lipids in tissues. They are scattered through reports on topics which vary from the structural biochemistry of the vitamins and hormones with steroid nuclei, to problems of the physiology and pathology of function of the lipids in the living cell.

The tables used most frequently in textbooks of dietetics have been quoted or recomputed from a compilation of cholesterol figures by Twiss and Greene in 1933 (1). At the time, these writers commented: "Many of the analyses are old. There is no distinction between cholesterol and other sterols. The need for a more accurate and comprehensive series. . .is obvious." Data published since 1933 certainly add emphasis to this last statement. Indeed, the more recent analyses would, in some cases, indicate values for cholesterol content only one tenth as great as those given in this table. Variations in figures in the literature are such that some understanding of the factors responsible for the discrepancies has become important to intelligent use of cholesterol data.

A few of the more important reasons for the differences in published values for cholesterol content of substances used as foods follow:

1. In omnivorous and herbivorous animals, at least, cholesterol content of certain tissues can be altered by changes in diet. Feeding cholesterol as such, or as egg yolk, to a rat or a guinea-pig may, for example, increase the level of cholesterol in the liver from a normal of 0.25 per cent to as much as 8 or 10 per cent. The figures quoted by Twiss and Greene for liver (0.3 to 3.4 per cent), come well within this range. Diets fed to meat-producing animals such as cattle and sheep are, however, very low in cholesterol.

Species differences in response to cholesterol feeding have likewise been demonstrated, but they would also indicate the probable validity of the lower figures. The composition of dog and cat liver is very little altered by cholesterol feeding.

2. Published figures for cholesterol are often expressed as percentage of dry weight—that is, as percentage of the material left after all water has been removed from a tissue sample. Cholesterol-containing foods often have a 50 to 80 per cent water content. Hence a figure of 3 per cent on a basis of dry weight may mean 0.6 to 1.5 per cent in the food as eaten. Unfortunately, many of the published figures are not clearly designated; no figures for moisture are given and it is difficult or impossible to tell what the data do mean. For example, the high value quoted by Twiss and Greene for kidney may possibly be a dry weight figure. We have never been able to demonstrate any great change in kidney cholesterol as a result of cholesterol feeding.

3. Different methods of analysis may give different cholesterol figures for the same food, even in the hands of the same investigator. Data from different laboratories are still more likely to disagree.

Procedures in most frequent use call first for complete extraction of the cholesterol by a fat solvent or a mixture of solvents such as alcohol-ether. Cholesterol, especially when combined with fatty acid, is difficult to extract, and often remains behind after all other lipid material has been dissolved. Its incomplete extraction is therefore a frequent source of error.

Once extracted, the cholesterol must be freed from combined fatty acid by saponification. Unless this procedure is carried out under very carefully controlled conditions, some of the cholesterol itself will be destroyed by the alkali used.

Cholesterol is ultimately determined: (a) colorimetrically, usually by some modification of the Liebermann-Burchard reaction (2); (b) by precipitation as the digitonid, a compound which may be washed carefully and oxidized according to the method of determination used in our own laboratory (3, 4), or it may be determined colorimetrically by the procedure (5) of Schoenheimer and Sperry; and (c) by separation of the insoluble dibromid (6).

Any one of these methods, if carefully controlled, will give reliable results in the hands of the careful and experienced worker. All, however, are relatively difficult and time-consuming, and demand careful manipulation. In general, figures from direct colorimetric estimation of the cholesterol tend to be slightly higher than those from the other methods.

4. Reactions of cholesterol are nonspecific—that is, are positive for a considerable number of substances of similar structure, especially for other sterols. Cholesterol itself is found only in products of animal origin. Most of the phytosterols and sitosterols of plant tissue and vegetable oils give a positive color with the Liebermann-Burchard reagent, and a number of them can be precipitated by digitonin. In other words, we must combine our knowledge of the origin and type of sterol present with the results of the quantitative determination before we are reasonably certain that we are dealing with cholesterol. Published figures for "cholesterol content" of foods of vegetable origin represent not content of cholesterol itself, but content of other sterols that have digitonids of similar solubility or that give similar color reactions.

The nature of the sterol in a food may be of the utmost importance in determining the desirability of its use in the diet. The work of Schoenheimer and others (7) is generally considered to indicate that mammals absorb plant sterols with great difficulty or not at all. This means that we need not consider the sterols contributed by vegetable food when we compute the cholesterol content of a diet.

The present paper includes:

1. A series (Table 1) of analyses of samples purchased in open market in Berkeley, made according to the method used in our investigations of the cholesterol content of tissues (3, 4). The number of samples studied was necessarily limited since the determinations are time-consuming, the work was done during a meat shortage, and some of the needed solvents were scarce. Samples accordingly were chosen from the available and frequently used foods for which data were meager, lacking, or in poor agreement. For the reasons noted above, no foods of vegetable origin were included. Each figure in the table represents an average result from at least two duplicate analyses that were in close agreement.

2. Figures from other recent analyses (Table 2) of substances used as human food, most of which were originally expressed as percentage of dry weight and included no data on moisture. The figures have therefore been recomputed to an approximate raw-fresh-food basis with

[1] Received for publication June 15, 1944.

the aid of the data on water content of American food materials by Chatfield and Adams (8). Dry weight figures are also given for reference.

3. Averages of the figures from analyses of a relatively large number of tissues from rats previously fed on each of three levels of fat intake are summarized (Table 3). These show the extent to which we may expect cholesterol content of tissues, and hence of foods, to vary with the usual variations in fat intake. All of these animals were on diets low in cholesterol. The figures given are from our laboratory, and some have not previously been published.

4. Similar figures from the literature on cholesterol content of other laboratory animals are given (Table 4).

TABLE 1

Cholesterol content of food samples purchased in open market (edible portion)

FOOD	MOISTURE	FATTY ACID	TOTAL CHOLESTEROL
	%	%	% *moist weight*
Muscle meats			
Beef round (medium fat)	72.1	4.6	.125
Beef round (lean)	71.7	2.1	.095
Veal shank	74.5	1.0	.14
Veal breast	70.6	7.2	.10
Pork spareribs	56.4	19.5	.105
Variety meats			
Liver			
Lamb (4 samples)	67.1	5.9	.61
Pork	69.6	3.7	.42
Beef	68.0	3.7	.32
Calf (4 samples)	74.7	3.0	.36
Tripe	82.7	4.1	.15
Sweetbread	79.1	1.0	.28
Shellfish			
Oysters, eastern*	84.1	1.7	.23
Oysters, California* I	87.6	2.9	.28
Oysters, California* II	85.4	5.2	.47
Crab*	77.1	.85	.145
Cheeses			
American	35.5	28.2	.16
American, processed	38.7	21.6	.155
Swiss, processed	38.7	21.0	.145
Monterey Jack	28.2	29.9	.19
Velveeta	40.9	19.3	.16
Limburger, processed	51.3	20.0	.135
Pimento cream, processed	65.6	16.3	.14
Butter	—	68.0	.28
Egg yolk, dried	3.7	63.8**	3.9
Egg yolk, fresh	49.5	33.1†	2.0
Primex*	—	99.0	.15
Brewers' yeast, dry*	—	—	.68
Casein, raw	—	—	.065

* Total digitonin precipitable sterol. These foods are known to contain sterols other than cholesterol.

** Total ether extract, hence total lipids.

† Calculated from actual analysis of a dried sample.

TABLE 2

*Cholesterol content of substances used as foods**

	"FAT"	TOTAL CHOLESTEROL	MOISTURE**	FAT	TOTAL CHOLESTEROL	SOURCE OF DATA†
	% *dry weight*	% *dry weight*	%	% *moist weight*	% *moist weight*	
Organs						
Beef brain	I 49.4	10.67	77.9	10.9	2.36	(1)
	II 53.8	9.61	77.9	11.8	2.11	(1)
Beef heart	I 17.4	.49	70.0	5.2	.15	(1)
	II 15.5	.46	70.0	4.7	.14	(1)
Beef kidney	I 16.6	1.60	74.9	4.2	.40	(1)
	II 17.9	1.67	74.9	4.5	.41	(1)
Beef liver	I 20.5	.86	69.7	6.2	.26	(1)
	II 25.5	.63	69.7	7.7	.19	(1)
Beef lung	I 14.6	1.95	80.0	2.9	.39	(1)
	II 15.0	1.75	80.0	3.0	.35	(1)
Beef thymus (sweetbread)	I 10.5	.99	75.0	2.6	.25	(1)
	II 30.4	.89	75.0	7.6	.22	(1)
Heart muscle						
Rabbit		.57	64.0		.20	(2)
"Av. mammal"		.51	64.0		.18	(2)
Hen		.54	69.6		.16	(2)
Pigeon		.52	69.6		.16	(2)
Duck, wild		.52	69.6		.16	(2)
Turtle		.80	80.0		.16	(2)
Skeletal muscle						
Beef	I 14.2	.21	70.0	4.2	.06	(1)
	II 9.8	.22	70.0	2.9	.06	(1)
Lamb	11.2	.24	71.0	3.2	.07	(1)
Pork	22.4	.175	64.0	8.0	.06	(1)
Rabbit, laboratory		.17	67.9		.05	(2)
Rabbit, wild		.25	67.9		.08	
Veal	11.8	.25	74.0	3.0	.065	(1)
"Av. mammal"		.27	67.9		.087	(2)
Chicken, light	12.7	.35	73.0	3.4	.09	(1)
Chicken, dark	7.0	.32	72.5	1.9	.06	(1)
"Hen"		.25	73.0		.07	(2)
Duck		.21	68.8		.07	(2)
Pigeon		.41	74.0		.11	(2)
Codfish	9.5	.29	82.6	1.6	.05	(1)
Frog	10.9	.23	82.0	2.0	.04	(1)
Salmon	18.3	.16	64.0	6.6	.06	(1)
Shrimp	8.1	.74	80.0	1.6	.15	(1)
Turtle	I 17.4	.32	80.0	3.5	.06	(1)
	II	.35	80.0		.07	(2)
Eggs (hen's)						
Frozen whole		2.11	73.4***		.56	(3)
Frozen yolk		2.88	53.8***		1.33	(3)
Liquid whole		1.97	73.7***		.518	(3)
Dehydrated whole					2.14	(3)
Dehydrated yolk					2.81	(3)
Fresh whole	50.3	1.80	74.0	13.1	.468	(1)

* Recomputed to approximate raw food bases from dry weight figures given in recent papers.

** Moisture data were selected from those by Chatfield and Adams (8), except for the original figures from Haenni (3) which are designated by three asterisks.

† Sources of data:

(1) M. Kaucher, H. Galbraith, V. Button and H. H. Williams: The distribution of lipids in animal tissues. Arch. Biochem. 3: 203, 1943.

Note: The figures for cholesterol ester were computed back to cholesterol as ester and added to free cholesterol values. "Total lipid" is considered fat.

(2) Bloor, W. R.: The cholesterol content of muscle. J. Biol. Chem. 114: 39, 1936.

(3) Haenni, E. O.: Report on eggs and egg products. J. A. O. A. C. 25: 365, 1942, and 24: 119, 1941.

Note: Estimation of cholesterol was by separation of the dibromid.

EFFECTS OF HIGH-CHOLESTEROL DIET

Some discussion of the possible importance of cholesterol in the diet of human beings may be in order. There is ample evidence, not only from our laboratory but also from many others, that diets high in cholesterol produce fatty livers in rats, mice, and herbivorous animals. Rabbits on high-cholesterol diets also develop arteriosclerosis (9). Guinea-pigs fed cholesterol-rich diets develop severe anemias and often have gallstones (10, 11). Car-

nivorous animals, on the other hand, can ingest considerable cholesterol without formation of fatty livers (12).

No very drastic cholesterol feeding experiments have been attempted with human beings. Some years ago I was able to demonstrate a slight but consistent rise in the postabsorptive level of blood cholesterol in normal women taking 4 egg yolks daily for a month (13). Judging from the literature, in cases where certain types of liver injury exist, the effect of ingested cholesterol may be exaggerated. There is also evidence, based on the increased incidence of lesions involving cholesterol deposition in tissue, that individuals with abnormal fat metabolism (such as diabetics) may be less well able to handle cholesterol than normal persons.

TABLE 3

Cholesterol content of rat tissues

	DIET WITH 5% FAT*			DIET WITH 10% FAT**			DIET WITH 15% FAT**		
	Moisture	Fatty acid	Total cholesterol	Moisture	Fatty acid	Total cholesterol	Moisture	Fatty acid	Total cholesterol
	%	% moist weight		%	% moist weight		%	% moist weight	
Liver	70.8	5.5	.28	66.9	5.4	.29	64.1	—	.31
Lung	77.9	4.1	.45†	76.5	3.7	.42†	78.2	4.7	.37††
Spleen	76.3	2.96	.33	—	1.34	.26	74.8	3.7	.46††
Kidney	—	—	—	67.2	4.5	.44†	73.1	3.5	.43††
Heart	77.4	2.26	.13	—	2.30	.13	75.7	4.8	.22†
Brain	79.1	4.9	1.28†	78.6	4.0	1.26†	79.0	4.7	1.42†
Muscle	72.8	4.1	.09	73.7	3.32	.075	—	—	—
Skin (no hair)	45.8	24.4	.21	52.9	9.7	.40†	50.9	20.9	.61†
Hashed carcass	65.0	9.9	.12	68.6	5.0	.13	68.1	6.6	.13
Fat (adipose tissue)				14.2		.10†	9.7	2.4–3.6	.14†
Placentae‡							86.0	1.22	.28
Fetuses‡							89.4	.80	.17
Liver (pregnant animals)‡							69.0	4.1	.46
Liver (12 to 16 days old)‡							73.9	2.5	.32
Milk†							68.6	8.8	.06

* Gillum, H. L.: A comparison of the effect of vitamin A deficiency and "undernutrition" on the deposition of lipids in the tissues of the rat. Doctor's Thesis, Univ. of Calif., Berkeley, 1935.

** Unpublished data, this laboratory.

† Okey, R., Godfrey, L. S., and Gillum, F.: The effect of pregnancy and lactation on the cholesterol and fatty acids in rat tissues. J. Biol. Chem. 124: 489, 1938.

†† Older animals, on diet over 300 days.

‡ Colorimetric determinations. All unmarked figures determined by the digitonid.

According to other evidence, the ingestion of certain vitamins of the B complex in quantity (notably biotin) increases the tendency toward cholesterol deposition in the livers of rats and guinea-pigs. Biotin is present in high concentration in egg yolk, but its absorption is prevented by the avidin in raw egg white. Avidin is destroyed by heat in cooked eggs, whereas biotin is less sensitive (14).

In all the experiments with laboratory animals, the proportionate amounts of cholesterol fed have been high. Often, in fact, the experimental dosages have been equivalent to a diet containing 25 per cent egg yolk. No human beings have been fed anything comparable to this dosage while under observation; and the writer, at least, would hesitate to accept responsibility for consequences if such an experiment were carried out. It is unfortunate, however, that none of the habitual egg eaters, reported to consume 8 to 12 eggs per day, have ever been available for observation in a laboratory carrying out investigations on cholesterol metabolism.

THE LOW-CHOLESTEROL DIET

Practically, as the tables show, the dietitian who must follow a prescription for a low-cholesterol diet has an easy task. If no orgies of scrambled eggs with brains are allowed, and the egg intake in general is limited, the rest is comparatively simple. The use of kidney, sweetbreads, and liver is not entirely contraindicated on the basis of cholesterol content. All these organs, however, as well as brains and egg yolk, are rich sources of biotin and as such might well be used cautiously in the patient's diet until we know more about the interrelationships of biotin intake and cholesterol deposition. Finally, when the diet for the patient with deranged cholesterol metabolism is planned, the evidence that increased fat intake or increased concentration of bile salts in the intestinal tract makes for increases in cholesterol absorption should be borne in mind.

TABLE 4

Tissues of animals other than rats

	MOISTURE	FATTY ACID	TOTAL CHOLESTEROL	SOURCE OF DATA*
	%	%	%	
Cat				
Heart muscle	0	—	0.44**	(1)
Skeletal muscle	0	—	0.19**	(1)
Dog				
Heart muscle	0	—	0.61**	(1)
Skeletal muscle	0	—	0.32**	(1)
Smooth muscle	0	—	1.00**	(1)
Guinea-pig				
Liver	—	6.0	.54	(2)
	69.4	3.5	0.33	(3)
Kidney	74.5	8.9	.47	(3)
Lung	79.0	4.0	.46	(3)
Heart	76.1	6.3	.20	(3)
Muscle	74.9	.9	.09	(3)
Spleen	72.9	4.9	.35	(3)
Adrenal	—	8.56†	3.25†	(4)
	—	24.8	6.9	(3)
Rabbit, laboratory				
Liver (stock)	0	4.2	.53**	(2)
Liver (old)	0	3.4	.31**	(2)
Human (normal)				
Liver	†	3.0–3.5	.18– .38	(4)
Kidney	†	1.9–2.0	.25– .37	(4)
Suprarenal	†		2.6 –6.7	(4)
Muscle	†	7.2–8.7	.35– .37	(4)

* Sources of data:

(1) Bloor, W. R.: The cholesterol content of muscle. J. Biol. Chem. 114: 639, 1936.

(2) Cook, R. P., and McCullagh, G. P.: A comparative study of cholesterol metabolism and its relation to fatty infiltration. Quart. J. Exper. Physiol. 29: 283, 1939.

(3) Okey, R., and Greaves, V. D.: Anemia caused by feeding cholesterol to guinea pigs. J. Biol. Chem. 129: 111, 1939.

(4) Bloor, W. R.: Biochemistry of the fatty acids, A. C. S. Monograph Series. New York: Reinhold Pub. Corp., 1943.

** Dry weight figures.

† No data given, lipids as moist weight figures.

Cholesterol is known to be synthesized in the body. It is a normal constituent of every living animal cell and as such must have a definite function, even though the nature of that function is not yet clear. The younger and the more active the cell, the more cholesterol it contains (15). Only when cholesterol is deposited out of place, usually

in combination with fatty acid and in old, inactive, or injured tissue, is it the prime cause of trouble.

It has been postulated that the foods richest in cholesterol—for example, egg yolk, were designed by Nature to nourish the very young, and should not be used lavishly in the diets of older persons. The cholesterol of eggs, which furnish one third gram per yolk, adds up rapidly. On the other hand, eggs are easily digested; furnish good protein, riboflavin, iron, and phosphorus; and their use favors the variety, interest, and attractiveness of the invalid diet. Cautious and limited use, rather than elimination of cholesterol-rich foods, would seem advisable in planning a diet for the normal older person. And for the patient with deranged cholesterol metabolism, we should not neglect to consider total fat intake and general adequacy while we concentrate on limitation of cholesterol in the diet.

SUMMARY

Data for cholesterol, moisture, and fatty acid are presented from analyses made on a series of food samples purchased in the open market. These are supplemented by figures for a series of substances used as foods, recomputed largely from the dry weight data in recent papers from other American laboratories. Figures for cholesterol content of the tissues of laboratory animals are given for comparison.

Egg yolk and brain are the only foods shown to contain more than 1 per cent cholesterol. Figures for kidney, sweetbreads, and liver are much lower than in previously published tables.

Reasons for discrepancies in cholesterol figures in the literature are briefly given, together with a summary of factors known to affect cholesterol absorption and utilization.

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Home Economics Field Day, Detroit. The second Home Economics Field Day given for college preparatory students in Detroit high schools was conducted April 26, sponsored by the Detroit Home Economics Association, Home Economics Women in Business, Highland Park Junior College, Detroit Dietetic Association, Marygrove College, and Wayne University. A definite quota of students was invited from each school, totaling 500. Pupils were allowed time from school to attend the activities. Vocational counselors were also invited. A general assembly was held in the auditorium of a local department store and the program included a presentation of the various fields open to home economists, with representatives of each field introduced by Winning S. Pendergast, Director of School Lunchrooms, Detroit Public Schools. Training courses approved by the American Dietetic Association were represented by Mary M. Harrington, Harper Hospital; Margaret King, Henry Ford Hospital; and Ethel Heberlin, St. Mary's Hospital. A list of key persons in home economics in Detroit, in the printed program, included many dietitians. An extensive exhibit of photographs illustrating the activities of home economists was on display in the auditorium, and books and pamphlets on careers in home economics were available for distribution.

Previous to the general assembly, the high school students had made field trips to restaurants, hospitals, commercial companies, etc., with college students in home economics acting as guides.

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Forsyth Dental Infirmary for Children. The central feature of the work of the Nutrition Department has continued to be the medical-nutrition clinic with which is correlated the in-service training in nutrition for the dental interns and hygienists. The small number of interns, resulting in fewer referrals to the clinic, and the reduced staff of the department have made necessary a critical review of objectives. The result is that service has been given mainly to those children whose dental problems provide valuable material for research and teaching. The clinic has felt the pressure of wartime conditions in respect to an increase in the number of working mothers, which results in difficulties in accompanying children to clinic. The smaller size of the clinics, however, has made possible more intensive conferences on those cases that are accepted. Their histories, providing material of a revealing and provocative nature, stimulate the spirit of inquiry along broad biological lines.

The scope of the educational activities of the department has continued to include the intern staff, the hygienists, and students in public health nutrition from Simmons College. The department staff has contributed to several community activities in nutrition outside of the institution.—*Thirtieth Annual Report, 1945, Forsyth Dental Infirmary for Children, Boston.*

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"Heroes' Return." Each ship has aboard a dietitian, whose attention is directed to a few patients needing special diets. Second Lt. Margaret C. Fogarty, the *Chateau Thierry*'s dietitian, added to her duties on a recent trip the planning of a special all-American dinner for patients on the evening before the ship docked at Charleston. The menu included Florida fruit cocktail, roast Vermont turkey, Virginia ham, mashed Georgia yams, baked Idaho potatoes, Hawaiian pineapple, and gallons of fresh milk.—*Nicholas, W. H.: Heroes' Return. The National Geographic Magazine 87:349, 1945.*

EFFECT OF WASHING AND COOKING UPON THE THIAMIN CONTENT OF BROWN AND PARTIALLY POLISHED RICE[1]

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ENRICHMENT of white flour with thiamin to the whole wheat level has improved the intake of this vitamin for those who consume white bread (1) but the problem of adequate thiamin for those who obtain a large percentage of their calories from white rice has not yet been solved.

Williams and Spies (2) recommend the addition of thiamin to salt and state that "the universality of the use of salt in the cooking of rice would insure a reasonably uniform distribution of the vitamin among the population." For several reasons such a recommendation appears to be impractical in areas where rice is the staple food. Van Veen (3) has pointed out that thiamin is not stable in salt under tropical conditions. The most important reason, however, is the fact that the people of the Orient, who are the great rice eaters of the world, do not add salt to rice when it is cooked.[2]

In most Oriental countries, as in Europe, the use of white, highly milled cereals was once a mark of rank and wealth and despite its lower nutritive value everyone aspires to the use of white rice.

The continued use of rice milled at home ("hand-pounded") has been recommended by scientists interested in nutrition and public health in the Orient because of its greater nutritive value, and it has also been recommended that only undermilled rice be supplied in government institutions (5).

For many years prior to the war, authorities on nutrition in Japan urged the use of partially polished rice (6) or rice with the retained embryo and in 1939 (7) a government edict made it mandatory that all rice be milled not more than 70 per cent of the amount needed to make it completely polished, thus retaining about 30 per cent of the bran layers.

Considerable publicity has been given of late (8) to a method of producing a highly milled rice which retains most of the thiamin, by means of soaking and steaming the unhusked rice, then drying and milling the product in the usual way. This "new" method is based on an ancient custom in certain sections of the Orient which has been fully described by Aykroyd (9). He states that the primary purpose of the soaking and steaming process is to facilitate the removal of the woody husk from the grain by hand-pounding. Some years ago he investigated the antineuritic properties of "parboiled" rice and pointed out that during the steaming process some of the vitamin in the germ and pericarp diffuses through the grain and cannot be removed by subsequent milling.

Recently Aykroyd *et al.* (10) published a more complete study of this product, showing that most of the nicotinic acid as well as the thiamin originally present in the raw rice is well retained in highly milled "parboiled" rice.

If a modern commercial method utilizing this principle can be successfully applied to most, if not all, of the rice milled in the United States, it will be a remarkable achievement, but at present this product is not available for civilian consumption.

In the meantime the educational campaign for the use of brown (unpolished) or partially milled rice in Hawaii continues. In 1937 the yearly per capita consumption of rice in Hawaii was about 230 lb. (11). This has now decreased to approximately 130 lb., probably largely because of a great influx of mainlanders who eat little or no rice. A study of the diet of Japanese families in 1935 and 1936 showed that 206 to 350 lb. rice was consumed per person per year (12). There is not much reason to believe that rice consumption has decreased greatly among those of Oriental ancestry, except as increased incomes have afforded an opportunity for a more varied diet. It is a point of interest that Caucasians reared in Hawaii are as fond of rice as those of Oriental ancestry and often prefer it to bread or potatoes.

Since 1932 a large majority of the cafeterias of the public schools have used only brown rice except for short periods when it was unobtainable, and a good many families have adopted the habit of using brown rice. Figures on the present importation of white and brown rice indicate that approximately 100,000 lb. of brown rice is used monthly, although this is only 2 per cent of the total rice imported into the territory.

A number of investigators have reported losses of 0 to 85 per cent of the thiamin when rice is washed and cooked (3, 10, 13). Experiments of Aykroyd *et al.* (10) indicated that cooking per se did not destroy the thiamin.

EXPERIMENTAL

We were interested in determining the loss of thiamin as a result of washing and cooking brown rice and partially milled rice. It is the common custom among families of Oriental ancestry in Hawaii to wash white rice through 4 to 5 changes of water. We wished to determine the effect of this procedure upon brown and partially polished rice. Since rice is not eaten in the raw state we were concerned only with the losses due to the complete washing and cooking process. Accordingly the rice was washed, cooked, and assayed in the state recommended for human consumption. For the typical Oriental method of cooking rice a relatively small amount of water is used and none is discarded. The finished product is more firm and contains less water than rice cooked by typical American methods.

Various samples of unpolished brown rice of the short-grain variety, labeled Fancy California Brown Rice, were used for all the experiments. Samples used to compare the thiamin content of brown and partially polished rice were obtained as follows: Some of the brown unpolished rice was removed from a fresh sack and the remainder made into partially polished rice.

The following methods were used in preparing the rice:

Brown rice—unwashed. Foreign material was removed from the rice. One half cup (96 gm.) rice was added to three quarter cup (175 gm.) hot water in which the rice soaked for 2 hr. The mixture was then brought to a boil and boiled gently until most of the water was absorbed or had evaporated; the heat was then reduced so that the rice steamed for 30 min. (total cooking time about 50 min.).

Brown rice—washed. The rice was picked over and washed for 5 successive times, approximately one cup water being used each time. Sufficient hot water was added to make the weight equivalent to that for the unwashed rice. The rice was soaked and cooked in exactly the same manner as for the unwashed rice.

[1] Published with the approval of the Director as Technical Paper No. 120, Hawaii Agric. Exper. Sta. Received for publication September 5, 1944.

[2] I can speak from first-hand knowledge and with certainty regarding Chinese, Japanese, Korean, and Filipino cooking of rice. It is also my impression that the rice which I ate in the Netherlands Indies, Malaya and India was also cooked without salt. These people obtain their salt from condiments like soybean sauce and fermented soybean products such as *miso* (4), from salt pickled vegetables or from other foods cooked with salt. (Author)

Partially polished rice—unwashed. Foreign material was removed from the rice. Two thirds cup (150 gm.) cold water was added to one half cup (96 gm.) rice, and without soaking, the product was cooked as for brown rice except that the steaming period was reduced from 30 to 20 min. (total cooking time about 40 min.).

Partially polished rice—washed. The rice was washed through 5 changes of water, as for the brown rice. The quantity of water was made equivalent to that for the unwashed partially polished rice. The rice was then cooked in the same way as the unwashed partially polished rice.

Cooked rice for the feeding experiments was prepared twice each week. Although the same weights of water and raw rice were used each time, it was impossible to control the heat and the evaporation of water so that the weights after cooking would be exactly the same in each case. As the same quantity of cooked rice was fed daily, this meant that the raw equivalent varied slightly for each lot of cooked rice. The raw equivalents shown in Table 1 are therefore averages for each set of experiments and each type of rice.

The thiamin content of the rice was determined by the biological method used in this laboratory (14). The results are summarized in Table 1.

TABLE 1

Summary of the results of feeding different types of rice to rats as the sole source of thiamin

DAILY SUPPLEMENTS	NUMBER OF ANIMALS	AVERAGE WEIGHTS			MEAN GAINS		THIAMIN
		At start	At depletion	Final weights	In 3 weeks	Standard deviation	
		gm.	*gm.*	*gm.*	*gm.*		*mcg./100 gm.*
Series I (second depletion) Thiamin, 4 mcg.	13	102	98	125	27 ± 2.3	8.4	
Lot 1							
Brown rice, unwashed, cooked, 3 gm. = 1.27 gm. raw	13	101	95	120	25 ± 2.9	10.2	126 cooked (298 raw)
Brown rice, washed, cooked, 3 gm. = 1.3 gm. raw	13	99	93	114	21 ± 1.7	6.1	114 cooked (263 raw)
Series II (first depletion) Thiamin, 3 mcg.	16	38	69	107	38 ± 2.2	8.7	
Lot 2							
Brown rice, unwashed, cooked, 3 gm. = 1.26 gm. raw	13	38	69	103	34 ± 3.0	10.4	86 cooked (205 raw)
Brown rice, washed, cooked, 3 gm. = 1.31 gm. raw	12	38	68	100	32 ± 2.6	9.0	80 cooked (184 raw)
Series III (first depletion) Thiamin, 3 mcg.	12	40	72	105	33 ± 2.9	10.3	
Lot 3 A							
Brown rice, unwashed, cooked, 3 gm. = 1.24 gm. raw	13	41	71	108	37 ± 2.8	10.0	116 cooked (280 raw)
Lot 3 B							
Partially polished rice, unwashed, cooked, 4 gm. = 1.75 gm. raw	12	42	72	109	37 ± 2.3	8.0	87 cooked (198 raw)
Series IV (second depletion) Thiamin, 4 mcg.	13	106	103	140	37 ± 2.2	7.9	
Lot 3 B							
Partially polished rice, unwashed, cooked, 4 gm. = 1.77 gm. raw	12	104	100	132	32 ± 2.4	8.4	88 cooked (199 raw)
Partially polished rice, washed, cooked, 4 gm. = 1.77 gm. raw	13	107	103	127	24 ± 2.4	8.6	71 cooked (160 raw)

RESULTS AND DISCUSSION

The different lots of California brown rice used varied in thiamin content from 205 to 298 mcg. per 100 gm. raw rice. This is well within the range of values reported (10).

The results of the experiments in Series I (Table 1) indicated an apparent loss of about 12 per cent of the thiamin as a result of washing and cooking brown rice. Statistical analyses of the difference between the mean gains of the rats fed washed and unwashed rice showed that the difference was not significant. As others had reported large losses when brown rice was washed (10), a second assay was made. Although the second lot of brown rice contained less thiamin than the first, the apparent loss due to washing and cooking was small and the difference between the mean gains of the rats was not significant. These results clearly indicate little or no loss of thiamin when brown rice is washed prior to cooking. This is in agreement with Van Veen's statement that "The washing of husked rice has comparatively little influence" (3), although the data in his tables do not appear to support his statement.

The differences between the mean gains of the groups of rats fed washed and unwashed partially polished rice appear to be significant and the apparent loss of thiamin was about 20 per cent. The partially polished rice had numerous small particles of adhering rice bran which were removed when the rice was washed. It seems probable that this accounts for the greater loss of thiamin in the cooked, partially polished rice.

These losses of thiamin when rice is washed and cooked are very much less than those reported by Aykroyd *et al.* (10) for the Indian Laboratory and by others whom he cites. However, in the Indian experiments the rice samples were cooked in about four times as much water as we used and the cooking water (*congee*), which was poured off, was found to contain 10 to 33 per cent of the original thiamin content of the rice. People of Oriental ancestry in Hawaii never use such a method of cooking and do not discard any water.

Leong (13) reports 40 per cent destruction of thiamin when unhusked (brown) rice was cooked and no loss when three other types of rice were cooked. Unfortunately he does not state the method of preparation nor whether the rice samples were washed before cooking.

It is probable that the amount of water used and the rapidity with which the rice is washed materially affect the quantity of water-soluble vitamins removed. From our experiments it would appear that the losses in thiamin due to washing and cooking of brown rice need not be greater than 10 per cent if the rice is first picked over in the dry state to remove foreign material and then washed rapidly through not more than 2 changes of water without allowing the rice to stand in the wash water.

The results of experiments in Series III, done to determine the loss of thiamin as a result of milling, showed that the locally prepared partially polished rice loses approximately 30 per cent of the thiamin as a result of milling. The partially polished rice is locally called *haiga mai*, which means literally "embryo rice." However, exam-

ination under the microscope shows that part of the pericarp, as well as part of the embryo, is retained.

If 30 per cent is lost in milling and 20 per cent of the remainder is lost in cooking, a total loss of about half the original thiamin content results. However, partially polished rice is definitely to be preferred to white rice which is almost if not completely devoid of thiamin after thorough washing and cooking. Washed, cooked, partially polished rice will furnish about 60 per cent of the amount of thiamin which may be obtained in cooked brown rice, whether washed or unwashed. People accustomed to white rice often find it difficult to change to brown rice but they make the adjustment more easily if partially polished rice is first used. Some families mix white and partially polished rice, gradually increasing the amount of partially polished rice used.

To be acceptable to most people, brown rice must be properly cooked. More water must be used and the period of cooking must be longer than for white polished rice. In 1940 the University of Hawaii Cafeteria began serving brown rice as well as white rice and the patrons, including a large number of people of Oriental ancestry, could select one or the other. The cooks accustomed to preparing white rice were encouraged to improve the quality of the brown rice by soaking and longer cooking. The patrons voluntarily decreased their consumption of white rice until finally only brown rice was served and with no complaints from patrons. This appears to be a good demonstration of the way in which people can be encouraged to improve their food habits through the products offered at the cafeteria counter.

SUMMARY

1. Different lots of California brown rice of the short-grain type were found to vary considerably in their thiamin content (208 to 298 mcg. per 100 gm., raw weight basis) when tested by the rat-growth method.

2. Judging from the results of the rat-assay method, no significant quantity of thiamin was lost when brown rice was washed rapidly through 5 changes of water.

3. Partially polished rice as sold in Hawaii contains about 70 per cent as much thiamin as the unprocessed brown rice.

4. Partially polished rice lost more thiamin than brown rice as a result of washing (about 20 per cent). This increased loss may largely be due to the washing off of adhering rice polish which clings to the partially polished grains.

5. A well-cooked brown rice has been found to be acceptable to cafeteria patrons when the change from white to brown rice was made gradually by allowing the patrons a choice of one or the other.

6. The use of partially milled or, better still, brown rice is probably the best means of improving the thiamin content of the rice eater's diet until a highly milled type of "parboiled rice" becomes generally available.

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Importance of the School Lunch in Establishing Good Food Habits

The importance of the school lunch program as an aid in the formation of good health and social habits for children is now a widely recognized and accepted fact. . . .

For many, the establishment of good food habits means modification of some of the habits they have developed at home. The following experiments illustrate how city school systems have learned that good eating habits can be started in the nursery school. It is much harder to break down the prejudices already formed by older children.

In one system it was suggested that all schools serve liver in some form at least once a week. This was done in the various nursery, elementary, and high schools. It was found that liver was popular only among the nursery school children where the teachers had their lunches with the children and encouraged them individually to eat everything served to them. In fact, liver became so popular in these nursery schools that when the children were allowed to select their Christmas menu, they selected liver patties with tomato sauce. Experience has shown that through careful education children can be taught to eat, and to like the nutritious foods.

In another system the introduction of whole grain cereal breads was accomplished through the gradual serving of sandwiches with one slice of white bread and one slice of whole grain cereal bread, then serving the popular sandwich fillings such as ham and tuna fish on two slices of whole grain cereal bread and the less popular sandwiches on another kind. At the beginning of the next school year, all sandwiches were served on the whole grain cereal bread without any fanfare about the change.

Again, educating children to select and eat the correct foods may be illustrated by the following story. In the distribution of surplus foods the Federal Government offered a quantity of rice to a school system in a community where it was an unfamiliar dish. Consequently, when the meat, rice, tomato, and vegetable dish was introduced, it was not eaten. The lunchroom department, with the cooperation of the other departments, decided to do something constructive about it, making it a project for the entire school. In the classrooms the children studied where the rice was grown and made drawings of the rice fields. They studied the customs of the people, and in one class they made paper costumes signifying the different vegetables, rice, carrots, etc. that had been in this dish. The English classes wrote and presented a play centering on the subject, and the music department composed music to go with some of the jingles the children had written. At the end of the program, the lunchroom manager served each child a sample of the food. The next day the children came to the lunchroom asking for it, and when it was introduced again in subsequent weeks it proved very popular. The introduction of new foods has also been accomplished in some systems by making it a regular practice to give away small samples gratis to each child.—*Excerpts from an article by Constance C. Hart in Food and Nutrition News, published by the National Live Stock and Meat Board, November 1944.*

ASCORBIC ACID CONTENT OF FOOD SERVED TO ARMY STUDENTS[1]

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IN FEBRUARY 1944, a 2-week survey of the diet of Army students was begun at the Kansas State College of Agriculture and Applied Science (1). At the same time ascorbic acid determinations of the food as served were made. While the dietary survey made it possible to estimate the ascorbic acid intake per man per day, in view of the effect of conditions of storage, processing, and holding, it seemed desirable to use a more accurate means of determining the ascorbic acid content of the food when served.

The food service, for Army students alone, was under the management and supervision of trained dietitians, who endeavored to keep at a minimum any factors apt to decrease the nutritive value of the food. Ample cold-room facilities were available for storage and holding of food, and the following types of equipment used in preparation:

(a) For steaming: A 2-compartment, direct-connected steamer with synchronized thermostatic control, each compartment equipped with temperature-pressure gage; maximum pressure in compartments, 5 lb.
(b) For boiling: Steam-jacketed, 25-gal. aluminum kettles.
(c) For baking: Heavy duty gas ovens.
(d) For cutting and chopping, as for mixed salads: Electric cutter with chopping attachment.

Some 15 min. after serving began at each meal, sample portions as served to the Army students were secured in duplicate or triplicate from servers at different stations on the 4-way counter. Portions secured were thought to be representative of those served the students, in size, in method of handling, and in unavoidable delay on steam table, serving counter, or tray. Portions were taken at once to the laboratory, weighed, mixed, and sampled. Samples were covered with a dilute solution of metaphosphoric acid and macerated in a Waring Blendor. Ascorbic acid determinations (2), modified to use 3 per cent metaphosphoric acid in extractions (3, 4), were made promptly. Meat, fish, poultry, and eggs were not sampled, containing too little ascorbic acid to contribute materially to the sum total in the average daily diet, but all foods containing fruit, vegetables, and milk were sampled and analyzed. Results of the ascorbic acid determinations were computed as milligrams per 100 gm. food, as milligrams per serving, and finally as milligrams of ascorbic acid, for each of the 14 days, assuming that average servings of each food were consumed (Table 1).

Milk served to the Army students was pasteurized and bottled in the college dairy. The Army students consumed on the average 1.6 pt. per man per day. Judged by ascorbic acid determinations of samples of the milk as offered bottled in the mess hall and as used in made dishes, it was estimated that the average student received 5.9 mg. ascorbic acid daily from milk.

As indicated in Table 1, an average of 82.9 mg. ascorbic acid was supplied each Army student daily, or 10 per cent more than the 75 mg. suggested by the National Research Council for the active man. The amount supplied varied from day to day more than might be expected for carefully planned meals which included generous amounts of fruits and vegetables, many of which were served raw. The maximum supplied in one day, 131.3 mg. ascorbic acid, was almost four times as great as the minimum of 34.1 mg. On 8 of the experimental days the food supplied ascorbic acid in quantities greater than 75 mg., but there were 6 days when the amounts were low.

TABLE 1

Ascorbic acid content of the diet

RESULTS FOR A TYPICAL DAY: THURSDAY, MARCH 2, 1944						
Food	Wt. per serving	Ascorbic acid		ASCORBIC ACID PER MAN PER DAY		ASCORBIC ACID SEQUENTIAL RANGE
		Per 100 gm.	Per serving			
	gm.	*mg.*	*mg.*	*date*	*mg.*	*mg.*
Fresh pears	131.0	4.3	5.6	Feb. 19	60.0	131.3
Dry cereal						
Milk				Feb. 20	38.3	123.1
Soft-cooked eggs						
Toast, butter				Feb. 21	123.1	107.2
Pineapple jam	30.0	8.4	2.5			
Coffee				Feb. 22	91.4	103.6
Vegetable soup, crackers	278.8	1.0	2.8	Feb. 23	62.5	103.2
Cold cuts						
Buttered string beans	65.0	0.8	0.5	Feb. 24	103.6	102.0
Bread, butter						
Apricot upside-down cake				Feb. 25	48.5	96.3
Apricot portion*	46.0	2.8	1.3			
Milk				Feb. 26	107.2	91.4
Breaded veal chops				Feb. 27	96.3	62.5
Parsley potatoes	94.4	4.2	4.0			
Buttered spinach	65.0	2.0	1.3	Feb. 28	34.1	60.0
Grapefruit and orange salad						
Lettuce	15.0	3.4	0.5	Feb. 29	103.2	59.4
Grapefruit	33.8	34.5	11.7			
Orange	41.3	56.3	23.3	Mar. 1	102.0	48.5
Bread, butter						
Bread pudding, custard sauce				Mar. 2	59.4	38.3
Coffee						
Milk for day			5.9	Mar. 3	131.3	34.1
Total			59.4		1,160.9	
Average per day					82.9	

* Items containing ascorbic acid were separated and determined individually.

TYPES OF MENUS GIVING HIGH OR LOW VALUES

Study of the menus for the period and of foods contributing a good share of the ascorbic acid indicated the type of meals apt to give low or high amounts of the vitamin. Interesting points are:

1. On each of the 4 highest days (104 to 131 mg. ascorbic acid) a generous portion of citrus fruit was served at breakfast and vegetables rich in ascorbic acid, such as broccoli, cabbage and tomatoes, were also served during the day.
2. On each of the 4 lowest days (34 to 59 mg. ascorbic acid) citrus fruit was not served at breakfast and was included only once in the 4 days, in a salad, but in portions smaller than would have been offered at breakfast. Canned fruits, like apricots and pineapple, were served, but contributed little to the ascorbic acid of the diet. Lettuce was served, but was disappointing as a source of ascorbic acid. No doubt shipping, storage, and also periods of holding after slicing or shredding for salads caused loss of ascorbic acid. Tomatoes in some form appeared on the menu 3 out of the 4 low days, but were not sufficient in amount to bring the ascorbic acid intake up to a suitable standard.

[1] Contribution No. 112, Department of Home Economics. Received for publication October 10, 1944. The author wishes to thank Mrs. Bessie Brooks West, Head, Department of Institutional Management, and Col. J. K. Campbell and Maj. G. E. Hofto of the Department of Military Science, Kansas State College, whose cooperation made this study possible. The report has been approved for publication by the War Department Bureau of Public Relations, Washington.

Contributions of different groups of food are shown in Table 2. Citrus fruits were most important, supplying about one half the ascorbic acid, with leafy vegetables, "other vegetables" and tomatoes furnishing substantial amounts as indicated. These figures may be compared with the results of the survey (1) previously reported, in which the vitamin content of the diet was estimated, using the figures of Berryman and Howe (5) for computations. Ascorbic acid determinations showed less than expected amounts of ascorbic acid from the leafy vegetables and potatoes, which might be partly explained by methods of preparation, losses on standing, and the like. On the other hand, the direct determinations indicated that much more ascorbic acid came from citrus fruits than was expected. Totals per man per day were somewhat less by direct determination, but nevertheless were more than sufficient.

TABLE 2

Contributions of different classes of food to ascorbic acid of diet

Average ascorbic acid intake for 1 student, 14-day period

FOOD	BY ANALYSIS				PREDICTED BY DIETARY SURVEY (1)	
	mg.	*mg.*	%	%	*mg.*	%
Potatoes		46.8		4.0	181.4	10.7
Milk, ice cream		83.8		7.2	101.7	6.0
Leafy vegetables		179.0		15.4	486.6	28.7
Other vegetables		110.8		9.5	230.6	13.6
Citrus fruits						
Grapefruit	175.5		15.1			
Grapefruit juice	30.2		2.6			
Oranges, navel	361.6		31.2			
Lemons	5.0		0.4			
		572.3		49.3	486.6	28.7
Other fruits		41.2		3.6	33.9	2.0
Tomatoes						
Sliced, Mexican	40.0		3.5			
Canned juice	39.4		3.4			
Canned tomatoes	47.6		4.1			
		127.0		11.0	135.6	8.0
Other foods					39.0	2.3
Total, 14 days		1,160.9		100.0	1,695.4	100.0
Average, 1 day		82.9			121.1	

Table 2 also helps to show why a day without citrus fruits might mean too little ascorbic acid. The food for the two weeks being typical of that now recommended in this area for late winter or early spring, depended heavily on the citrus fruits for ascorbic acid, with a little more than one tenth supplied by tomatoes, one fourth by vegetables other than potatoes, and smaller amounts from other sources.

The calculations were made for an average student who took on his tray and consumed regularly the amounts of food ordinarily served. Variations were known to exist, some students asking for larger servings of certain foods or extra oranges at breakfast time. In contrast, there were students who took less than average amounts of food. Perhaps they refused the celery and radishes, or missed their fruit by staying away from the mess hall on Sunday morning.

FOOD LIKES AND DISLIKES

Some idea of major food likes and dislikes was also obtained. Of 50 questioned, all but one, who said that he did not care much for oranges, seemed to enjoy citrus fruits. Another did not like tomatoes in the various forms offered, and a few said that they did not eat salads. As a whole, they expressed a decided liking for salads, and about half the students, when questioned concerning food of which they might like seconds, mentioned fruits and salads. The food habits of this particular group, who had been eating at the mess hall for about a year, seemed to ensure a good intake of ascorbic acid routinely.

ECONOMICAL SOURCES OF ASCORBIC ACID

It seemed of interest to compare some of the more prominent food sources of ascorbic acid from the standpoint of economy, *i.e.*, comparative purchase price at a given time. Unfortunately, vegetables like cabbage and broccoli could not be included, because of difficulty in relating the finished dish, cooked or with sauces or dressings added, back to the raw product as purchased. Products possible to compare under the existing conditions are listed in Table 3. Navel oranges obtained during the test period were excellent in flavor and texture, and rich in ascorbic acid. Grapefruit, also of good quality, supplied ascorbic acid almost as cheaply, with canned grapefruit juice, a Texas product, a little higher. Canned tomato juice served to the students was a more costly source of ascorbic acid—more than twice as expensive as the fresh citrus fruits. Fresh sliced tomatoes, served several times during the 2-week period, were easy to prepare and serve, attractive on the counter, colorful on the trays, pleasing in flavor, a welcome change in late winter, but about four times as costly as fresh citrus fruit as a source of ascorbic acid.

TABLE 3

Economy of five foods as sources of ascorbic acid

FOOD	UNIT PURCHASED		ASCORBIC ACID		
	cost	*size*	*mg.*	*mg.*	*cost per 100 mg.*
Oranges, navel	$6.00	box of 176	73.0 per orange	12,848 per box	$0.047
Grapefruit	3.25	box of 80	82.0 per grapefruit	6,560 per box	0.050
Grapefruit juice, canned	0.275	#5 can (1,313 gm.)	30.2 per 100 gm.	396 per can	0.069
Tomato juice, canned	0.40	#10 can (2,855 gm.)	13.2 per 100 gm.	377 per can	0.106
Tomatoes, fresh	3.44	Lug (28 lb. or 12,536 gm.)*	13.2 per 100 gm.	1,655 per lug	0.208

* A lug of the fresh tomatoes supplied about 12,536 gm. (E. P.) tomato.

SUMMARY

For a 2-week period in late winter, 1944, food served Army students at Kansas State College was studied for ascorbic acid content. Determinations showed that the Army students received an average of 82.9 mg. ascorbic acid per day, with a minimum of 34.1 and a maximum of 131.3 mg. The N.R.C. standard, 75 mg. per day for an active man, was met with a margin of 10 per cent.

Citrus fruits supplied about half the ascorbic acid in the diet, tomatoes more than one tenth, and vegetables other than potatoes about one fourth the total. The 4 lowest days were those on which no citrus fruit was served at breakfast.

Citrus fruits, oranges and grapefruit, at the time were a cheap source of ascorbic acid, supplying it at about 5 cents per 100 mg. Canned grapefruit juice was a little higher, about 7 cents for the same amount. Tomato juice, canned, was more than 10 cents; while 100 mg. ascorbic acid, obtained from the fresh tomatoes then available, cost more than 20 cents.

To provide adequate ascorbic acid in the diet, wise buying, skilful menu-making, careful supervision of preparation and serving of food must all play a part.

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Dietitian's Aides in a Veterans Administration Hospital

After 14 months' work as captain of a Red Cross Dietitian's Aide Corps at the Veterans Administration Hospital, Hines, Ill., I wish briefly to review our experiences.

We started our training in May 1943 under the supervision of the chief dietitian and her staff. We can truthfully say it was a thrill to be part of such a well-organized institution. We were the first class of Dietitian's Aides to be trained in a government hospital.

The course we were given was the original one planned by the Red Cross and the American Dietetic Association. We had classes 1 day a week for 6 hours until the course was completed.

From the first day we were made to feel we were necessary, and truly a part of the organization. We were asked in one of our first lessons for suggestions as to changes in kitchen and dining rooms. The consideration given to our suggestions made us realize we had a definite place in the hospital.

Now that we have completed a year's work we have an organization we little dreamed of two years ago. Our schedule has become routine, in that we never want to be absent. As for the day's work becoming routine! Never! There is always some new task to be done each day. The visits to the patients are always a pleasure. We feel that they appreciate our work, too, and they are always very friendly and glad to see us.

For various reasons, our group diminished from 26 to 18 at the end of a year, so that new volunteers had to be trained to supplement our corps and a new course was begun in May 1944. Each day four of the experienced aides who were now called "senior aides" were asked to help the dietitians with the training program. Our assignment consisted chiefly of guiding the new class to different parts of the hospital, assisting with demonstrations during the practical application of lessons, and helping the students in weighing portions and setting up diet trays. We also escorted the student aides on visits to patients so that they could gain an understanding of hospital ethics.

In comparing the new course with the old (incidentally I attended all classes of both courses) I found the new one much more helpful. In the first place, the class met 3 days a week and the student was thus able to make better progress because she could more readily correlate the different parts of the course. Also, each lesson was clarified by a practical application which helped the students to learn quickly and retain what they had learned. Notebooks were required which have since proved very helpful.

By having the senior aides with the class at all times the students felt free to ask questions. I am sure it would have helped me a great deal when I was taking the course to have had some one in the group who had entered the hospital under similar circumstances.

With a group of 45 active volunteers we are able to have a number on duty at each meal, including breakfast, for every day of the week. We cannot but believe our work here at Hines is appreciated. We are repaid by the graciousness of both staff and patients. But I am sure we are receiving more help than we are giving, for the experience is invaluable to us.—*Clara S. Korst (Mrs. William H.), Captain, Dietitian's Aide Corps, Veterans Administration Hospital, Hines, Ill. Published with permission of the Medical Director, Veterans Administration, who assumes no responsibility for the opinions expressed.*

School for Dietitians of the Charity and Social Welfare Services, Chile

Training for dietitians in Chile began on an unofficial basis in 1939. At that time the entrance requirements were very general, and the course covered a 6-month period.

The results of this first project were so successful that in 1941 the course was extended to one year with more rigorous requirements for admission. Now, in 1945, the school has acquired official status as part of the Charity and Social Welfare Services, on a par with the schools of nursing and social work. The official course has been set for 2 years, but it is hoped that this time may eventually be extended so that the training will be on a level with that offered in other countries.

The first year is divided into 3 terms. The first term covers 60 hours of general classroom work in anatomy, physiology and nutrition, and 60 hours of classes in foods (sources, types, distribution, nutritive value, etc.), together with field trips (24 mornings), nutrition laboratory work and practice, and observation in hospitals.

The second term covers 50 hours of metabolism and diet in health, 50 hours of "culinary technique" and the organization of kitchens, and 24 mornings devoted to the preparation of normal diets, as well as afternoon laboratory work (nutrition and metabolism) and hospital experience.

The third term deals with nutrition in disease, termed "dietetics" (30 hours), food service administration (30 hours), accounting and hospital administration (16 hours), and hospital experience; 24 mornings are given over to the preparation of special diets.

An examination is held at the end of each term, with a comprehensive final at the end of the year, and a thesis is required. The entire second year is spent on responsible work in a hospital kitchen. A diploma is given upon successful completion of the course.—*Margaret Shatswell Price.*

Christmas Menu 1944—121st Station Hospital, England

(submitted by Lt. Ruth D. Jamieson, Hospital Dietitian)

Tomato Juice
Roast Turkey, Sage Dressing, Giblet Gravy
Mashed Potatoes Asparagus
Cranberry Jelly Sweet Pickles Celery and Carrot Strips
Rolls, Butter
Apple Pie, Sliced Cheese Hard Candy
Coffee

SOME PRACTICAL PROBLEMS IN FOOD COMPOSITION

JANE C. EBBS

Nutrition Adviser, Subsistence Division, Office of the Quartermaster General, Washington

Most of you are familiar with the Committee on Food Composition of the National Research Council, but I should like, briefly, to refresh your minds on its origin, present organization, and functions—the latter with particular reference to the Subsistence Division of the Office of the Quartermaster General.

In the fall of 1942, nutrition was of major importance to those concerned with planning the dietaries of the soldier. Information as to the nutritive value of many of the items served in Army messes was either lacking or so scattered that it was difficult to calculate the nutritive value of a ration without reference to many sources. To find the thiamin, riboflavin, and niacin values for all of the items was well-nigh impossible. Everyone calculating rations was using his own personal set of food values and frantically trying to fill in the gaps. New types of special, reserve, and emergency rations were being planned. To the person charged with the problem of predicting the nutritive value of these rations the responsibility was great. There was duplication of effort in various offices plus the almost insurmountable task facing each office in attempting to cover the literature, obtain information from laboratories and universities, and assemble and compile data on food composition.

Col. Paul P. Logan, Deputy Director, Subsistence Division, Office of the Quartermaster General, accordingly requested (1) the Food and Nutrition Board, National Research Council, to form a committee to expedite the assembling, coordination, and appraisal of food composition data and to promote and coordinate research so that the composition of all foods important to the Army might be known. This request was seconded by the Office of the Surgeon General, the Navy, and the Marine Corps. One of the first activities of the committee was to collect all available published and unpublished material on the composition of food items purchased by the Army and to solicit laboratory analyses of all components of the special rations, such as C, K, 5-in-1, etc. Laboratories all over the country were requested to send data on vitamin values of foods, and the Bureau of Human Nutrition and Home Economics gave the committee access to their files on food composition. In preparing the data for the armed forces, analyses were made of the special ration components as they were developed, which involved close coordination with the Army and participating laboratories and decisions as to vitamin determination methods as well as adherence to Army specifications and changes therein. This work is continuing so that we may know to the last milligram what each component will contribute to the nutrition of the soldier.

The Tables of Food Composition of the N.R.C. were made available to the armed forces, March 1943, and all calculations of the nutritive value of food consumed by the soldier in the United States on Field Ration A and overseas on the Expeditionary Rations have been computed on the basis of these tables, which will continue to be revised as more information is available.

THE PROBLEM OF PREDICTING NUTRITIVE VALUE OF FOOD AS SERVED

The present tables give the nutritive contribution of the food before cooking and holding, and include average refuse factors which do not necessarily apply to large-scale food operation procedures. In the consideration of cooking loss I should like to divide the discussion into two parts: 1. A consideration of the difference between the caloric value of the ration calculated by multiplying the poundage per issue by the "as purchased" value in the tables, and the caloric value of the same ration when the food served is determined by chemical analysis. 2. A consideration of the problem of conserving and predicting vitamin value following large-scale cooking operations.

In the Spring of 1944 the Army was faced with a forced issue of pork, which, from a nutrition standpoint, posed a serious problem. In addition to the increased weight as fat, the amount of fat trimmed before sale had been decreased in all cuts. If the nutritive value calculations were based on the fat content of carcasses and cuts used by the Army in 1942, the estimated total calories reaching the soldier would be in error. From the practical standpoint, those planning the Master Menu felt that a poundage of meat which contained more fat and less protein was not going to provide the soldier more calories, since more fat would be trimmed off in the kitchen and sent either to salvage or used in subsequent cooking, and more would be trimmed off when served to the soldier and would find its way to garbage and salvage. According to our usual procedure the poundage value per man of each cut, times "as purchased" value, yields calories to be consumed. In reality we knew that would not be valid. Although the actual change in the conformation of pork cuts was not known, an estimate was made, based on tentative calculations obtained from fat conservation data, and the total food issued to each man per day was increased by 200 calories to compensate for that which we felt would not be consumed. Since this, however, was merely an estimate, the Committee on Food Composition was asked to consider the problem. Actual chemical analyses were made of these cuts and the data now available are sufficient to serve as a guide in future predictions of total calories available from pork as issued. A similar study was made on beef.

Our second problem pertaining to calories concerns itself largely with fat; for instance, what becomes of calories lost between the point where the values are calculated on the "as issued" basis and where they are obtained by analyses of the same food as served? Judged by work undertaken at the U. S. Naval Medical Research Institute and observations by nutrition and quartermaster officers, we know that such a discrepancy exists. Results show that although an issue was calculated to yield 3900 and 4000 calories the actual value as served was between 3300 and 3400 calories (2), not including the subsequent deduction for plate refuse. The question is, what causes the 600 to 700-calorie loss? We are of the opinion that the accepted refuse factors in Circular 549, USDA, on which the Tables of Food Composition are based, are perhaps too optimistic when considered in relation to large-scale food preparation. It is doubtful, however, if that accounts entirely for the discrepancy. It can be assumed that mess preparation (trimming for salvage directly and trimming for rendering, and fat lost in cooking) as well as increased fat on pork cuts is responsible. It is emphasized that at present this is only a supposition and expressions of opinion will be most welcome.

In the mess hall kitchen, where the meat is cut, the fat is trimmed off and used in place of issue fat such as lard and lard substitutes, and the bone is removed. The Tables of Food Composition allow for that, and for a moderate amount of trimming, in the calculations. The-

oretically, therefore, the total poundage times the A.P. value should tell what the soldier eats. But does it? The meat, it should be remembered, is first trimmed by mess personnel. It may be trimmed close or to a less extent than anticipated, so that more fat reaches the soldier's plate. There, if excessive, it becomes plate refuse and is salvaged. After trimming, when the meat is fried, some of the fat may be burned up. The fat trimmed prior to cooking, if used in baked goods, is usually consumed by the soldier; if it is put in a deep fat fryer, it is used many times, then discarded for salvage. Thus much food fat which is included in estimations of calorie values consumed by the soldier, actually finds its way to the salvage depot. How can we best predict, therefore, the amount of calories that will be lost in cooking? This is a problem yet to be solved, and the Quartermaster Corps is hopeful that laboratories and institutions will concern themselves with this problem.

THE PROBLEM OF VITAMIN CONSERVATION

The need for research on the influence of marketing, processing, storage and cooking on the nutritive value of food was recognized at the National Nutrition Conference in 1941. At that time a general call for research was made to all laboratories and institutions and further encouragement was given by the awarding of financial grants by the Office of Scientific Research and Development to aid in such studies.

That this general call for research has been answered is indicated in the literature and progress notes from laboratories all over the country.

The Land-Grant institutions launched their program by way of a National Cooperative Project in 1941. To date, information relative to 70 commodities, including vegetables, fruits, cereals, meats, poultry, eggs, cheese, and nuts is available and has contributed much in filling the gaps in the Tables of Food Composition. Full realization of the urgency of the need for new and reliable data resulted in advance releases being sent to all interested persons. In addition, the experiment stations at colleges and universities in Arizona, Massachusetts, Colorado, Mississippi, North Carolina, Tennessee, Oklahoma, Alabama, and Missouri, and at Cornell University, have responded with studies of vitamin retention in large-scale messing practices in the Army Specialized Training Program mess halls. By the summer of 1944 material obtained from many of these stations, in addition to scattered data previously collected by the Committee on Food Composition and BHNHE, was sufficient to allow a compilation of data which we believe will permit a broad estimate of the cooking losses in Army messes. Many more studies, however, must be made before we can predict with assurance the total vitamin content of a cooked food.

This leads us to a consideration of the contribution made possible by grants of the Office of Scientific Research and Development. By January 1943, when the Committee on Food Composition became a reality, the Cornell University Home Economics Department laboratories were deep in the problem of vitamin retention and palatability of dehydrated vegetables. These laboratories, pioneering in this work, had developed a sampling technique essential to the success of any vitamin retention study. Dehydrated vegetables were a new product, one in which the Army was intensely interested. Palatability and vitamin retention studies were urgently needed. The Cornell plan included the study of vitamin losses during cooking procedures. The studies were varied to include those practices thought to be best for Army use, and those in common use, including studies of the effect of overcooking and long-time holding. Palatability tests were run at each stage and bimonthly progress reports were distributed. In addition to these data, the experimental work at Cornell has resulted in the development of certain recipes which the Quartermaster Corps has adopted. The Cornell laboratories also plan to study the effect of sulfiting and storage on vegetables and cut fruits now under procurement by the Army.

Under an Office of Scientific Research and Development grant, the University of California Home Economics Department, over a period of 3 years, has been observing the effect of sulfiting and other treatment on the quality and nutritive value of dehydrated fruits and vegetables. The resulting information has been practically applied in Quartermaster Corps activities. Plans for the coming year include, besides a continuation of the basic project, the examination of fruits and vegetables before and after cooking by regulation Army methods, and examination of samples stored under different conditions of packaging.

Another project made possible by a similar grant was that undertaken by BHNHE to obtain information on the losses of nutrients, particularly in vegetables, in an Army mess at Beltsville, Maryland, which might serve in predicting losses incurred in actual Army mess practices.

Again, in August of 1944, a grant was given to the Pentagon Post Restaurant Council who had expressed their intention of providing nutritious meals to the thousands of civilians and members of the armed forces in the Pentagon Building. Investigation of available data on conservation of nutritive value in large-scale cooking operations indicated that information on the subject was scarce, especially on practical methods of conservation in large-scale cooking. A nutrition laboratory was set up in connection with the restaurants, kitchens, bakery, experimental kitchen, sandwich assembly line, and beverage bars of the Pentagon Post Restaurant in order to determine the nutritive content of foods served in large-scale restaurant operations and to observe at which stage in the preparation loss of nutrients is greatest. Once this was established, revisions in preparation or cooking practices were to be devised whereby losses would be minimized. This project was commenced on a small scale but because of the interest of the Committee on Food Composition, Office of the Quartermaster General, Office of the Surgeon General, the Navy, Marine Corps, government agencies and private institutions, a deviation was made from the intended project and in 1943 the investigations were entirely concerned with nutritive content of the cooked food. Valuable data were obtained as a result. In the spring of 1944, the Office of the Quartermaster General expressed the opinion that information obtained from a broad program such as originally outlined would provide information indicative of losses to be expected in the garrison messes. A contract from the Office of Scientific Research and Development was accordingly granted.

The present plan is to study losses at various stages of preparation with special attention to the vitamin most likely to be destroyed during preparation. As far as possible the foods analyzed will be those most frequently served in Army messes and in the following relative order: Potatoes, tomatoes, cabbage, carrots, corn, spinach, squash, string beans, peas, beets, cauliflower, celery, eggplant, onions, lettuce. With the staff now employed and the equipment ready, we should soon have valuable data which can be practically applied.

AVAILABLE VERSUS TOTAL CARBOHYDRATE IN DETERMINING ENERGY VALUES

The problem of the use of "available" *vs.* "total" carbohydrate in calculating energy values was presented to the Committee on Food Composition in January 1944 by the

Office of the Quartermaster General (3). In the United States, calorie value for carbohydrate, as you know, is calculated by multiplying the total carbohydrate obtained by difference, by 4 calories per gram. The English practice is to apply the 4 calories per gram to the sum of the starch plus sugar alone. The Committee on Food Composition appointed a subcommittee under the chairmanship of Dr. L. A. Maynard, Cornell University, to study the problem. The report (4) of the chairman of the subcommittee after a detailed study of the question, is truly a classic. It was the opinion of the chairman that the use of "total" carbohydrate values (*i.e.*, 4 calories per gram) as originally derived by Atwater, is entirely suitable for calculating mixed diets to which we are accustomed. The question of the use of total carbohydrate value in evaluating relief rations high in foods of plant origin required further consideration.

These are but a few of the problems. The service which the Committee on Food Composition, under the direction of Drs. C. A. Elvehjem and P. L. Pavcek, has rendered to the Subsistence Division cannot be overemphasized. They have ably succeeded in coordinating laboratory research to the needs of the Army for specific knowledge on food composition.

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Progress in Dehydration

The dehydration industry is no longer in its infancy, it was stated at the recent annual meeting of the National Dehydrators Association in Chicago. Some of the facts concerning vegetable dehydration, which supplement information previously appearing in this JOURNAL, as presented by speakers at the sessions of the meeting follow:

W. B. Van Arsdel, Western Regional Research Laboratory, USDA, Albany, California, who directs research on preparation, blanching, processing, packaging and other problems connected with dehydration, remarked that the attainment of low moisture content in the dehydrated materials has been one of the least satisfactory parts of the standard vegetable dehydration process. Desiccation of the product after it has been packed in the can is a most promising method for attaining very low moisture levels, but it will still be necessary for the product put into the can to be dried to about the same extent as it is now. If it were packed at a higher moisture level, the amount of desiccant required and the space taken up in the can would very quickly become excessive. In connection with studies on the operation of "finishing bins" used for the purpose of reducing moisture content of dehydrated products to 4 or 6 per cent, Mr. Van Arsdel stated: "We recently made an interesting observation concerning the manner in which products shrink during drying and the effect of drying conditions on that shrinkage. The slowly-dried cubes of potatoes took about 5 times as long as the rapidly-dried ones. . . . There is a remarkable difference in volume. The slowly-dried cubes shrank very much more than the rapidly-dried ones. The rapidly-dried product is somewhat darker in color, shows fewer cavities, and preliminary work indicates that it is more difficult both to dry to a low moisture level, and to rehydrate when soaked in water. . . ."

Concerning sulfiting of vegetables, Lt. Col. Cecil G. Dunn, Subsistence Division, Office of the Quartermaster General, Washington, stated: "The Army's sulfiting program, which was instituted during the spring and summer of 1943, has progressed well. At the present time all cabbage and carrots are sulfited prior to dehydration, with very definite improvements in color and general qualities. A fairly substantial quantity of white potatoes and some sweet potatoes are also being sulfited prior to dehydration.

"Sulfiting aids in the prevention of deteriorative changes during dehydration, many of which would not be visible to the naked eye. The prevention of injury during dehydration adds materially to the storage life of the products and, in addition, aids in turning out products with greater uniformity of color and better appearance.

"In order to obtain the best results possible, arbitrary ranges of sulfite concentrations have been established. For cabbage, this is 750 to 1500 parts per million in the dehydrated product; for carrots, 500 to 1000 parts per million; and for white and sweet potatoes 200 to 500 parts per million. If the concentration falls below the minimum end of the range, some of the benefits of sulfiting will be lost." (During the coming year the WFA will require the sulfiting not only of cabbage but also carrots and white potatoes, according to Wayne J. Chastain, Procurement and Price Support Branch, WFA.)

The Vitamin Business

Nineteen forty-four was a busy year for U. S. vitamin manufacturers. They disposed of roughly $200,000,000 worth of capsules, tablets, syrups, elixirs, and other preparations—a third of all drug sales—over the counters of drug, grocery, and department stores and through mail-order catalogues. To millers and bakers they sold about $12,000,000 worth of B vitamins for enrichment of flour and bread; to margarine manufacturers, $2,000,000 worth of vitamin A; to fluid and evaporated milk companies, $1,500,000 worth of vitamin D; to animal-feed suppliers, $20,000,000 worth of vitamins A and D. Following the trend, manufacturers of beer, sandwich spreads, jams, jellies, and candy put $100,000 worth of assorted vitamins into their products. The U. S. Government was a large purchaser, too. About $5,000,000 worth of vitamin tablets were shipped to servicemen in far northern and tropical countries and for use in emergency field rations, in addition to vitamin preparations in other forms. At least another $13,000,000 worth of vitamins were bought for distribution abroad through lend-lease and the Red Cross. . . .

The total direct cost per bottle of 100 multiple-vitamin capsules is thus around 54 cents. . . . the final price around $3—the average retail price today.

Industry surveys report that a quarter of the families who once took vitamins do so no longer. In 1943–44, sales to college-educated families and those living in the larger cities fell sharply. These facts are a warning to the industry that the peak of the great vitamin boom has been reached.

The reactions of the industry to this wall writing have been diverse. On the one hand, realizing that the market will probably dwindle, ethical dealers and proprietary-brand manufacturers have begun to fight for their shares. Doctors are urged to prescribe more and more vitamins for their patients. Research disproves research. The public becomes increasingly confused. On the other hand, these same manufacturers, who are not without a capacity for self-criticism, are somewhat resigned to the public's disillusionment. Many of them freely admit that flamboyant claims have discredited the real achievements of vitamin research. Besides, they agree, there is no satisfactory medical proof that the normal individual is benefited by taking vitamin pills; that therefore a large percentage of consumer dollars—as well as valuable raw materials—are being expended to no purpose. And yet—vitamins *are* wonderful for those who need them. The question is: who needs them?

It boils down to this. Nutritionists acknowledge that a large segment of the population of the United States needs more food and better food habits. To raise inferior dietary standards, they urge a nationwide program of education in the careful selection and proper cooking of food—not pills to compensate for the lack of both. Until good food—and good cooking—can be made as glamorous to the public as pills, quantities of pills of some sort will undoubtedly be sold. Already the pharmaceutical world is buzzing with plans for commercial production and over-the-counter sale of amino acids. . . . Perhaps the challenge to the U.S. food industry, implicit in this fact, will one day be met. It is also a challenge to the U. S. consumer to get wise to good food and good cooking.—*The Vitamin Business, Fortune, May 1945.*

THE NUTRITIVE VALUE OF CANNED FOODS: VIII. DISTRIBUTION OF PROXIMATE AND MINERAL NUTRIENTS IN THE DRAINED AND LIQUID PORTIONS OF CANNED VEGETABLES[1]

AMIHUD KRAMER

Research Associate, Department of Horticulture, University of Maryland

THE present work, suggested by the Food and Nutrition Board, National Research Council, was undertaken in order to supply data on the composition of the drained and liquid portions of canned foods.

Five samples of each of the following canned products, obtained from commercial canning plants throughout the country during the 1943 canning season, were analyzed: asparagus, green beans, Lima beans, beets, carrots, whole kernel corn, peas, and spinach. Each was chosen with a view of obtaining maximum variability by selecting samples canned in different geographic regions of the United States, and differing as widely as possible in commercial characteristics.

METHODS

Each sample, consisting of 4 or 6 cans prepared in the same place during the same day and from the same type of raw material, was treated as follows: The contents of each can were drained on a 10-mesh screen (size of opening, .075 sq. in.) for 2 min., the liquid of all the cans combined, stirred, and a portion, designated as the liquid portion, removed for analyses. The drained solids remaining on the screen were treated similarly, but in addition were macerated thoroughly in a Waring Blendor before weighed samples, designated as the solid portion, were removed for chemical analyses.

Chemical methods of the Association of Official Agricultural Chemists (1940) were used for all the determinations except iron for which a modification of Stugart's method (1) was used, differing in the following respects:

The colored iso-amyl alcohol layer was washed with 25 ml. of a 5 per cent solution potassium thiocyanate saturated

TABLE 1

Proximate compositions of solid and liquid portions of some canned vegetables

PRODUCT	PROPORTIONS OF SOLID AND LIQUID IN CAN		MOISTURE		CRUDE PROTEIN (N × 6.25)		CRUDE FAT		CRUDE FIBER		ASH		CARBOHYDRATES*	
	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Asparagus														
Max.	71.75	39.19	92.87	96.01	2.44	0.84	0.48	0.06	0.80	0.05	1.85	1.79	3.10	2.58
Min.	60.81	28.25	92.17	95.03	1.65	0.40	0.32	0.02	0.20	0.03	1.39	1.42	2.42	1.70
Av.**	66.02	33.98	92.50	95.68	2.10	0.68	0.41	0.04	0.64	0.04	1.59	1.53	2.76	2.04
Beans, green														
Max.	63.14	40.30	93.73	96.74	1.71	0.53	0.07	0.03	0.65	0.07	1.42	1.40	5.19	2.11
Min.	59.70	36.86	91.38	95.97	1.14	0.27	0.02	0.00	0.33	0.02	0.86	0.80	3.50	1.76
Av.**	61.34	38.66	92.48	96.46	1.41	0.41	0.04	0.02	0.50	0.04	1.20	1.13	4.36	1.94
Beans, Lima														
Max.	71.53	35.71	77.29	94.79	5.66	1.45	0.60	0.03	2.59	0.07	1.91	2.19	18.33	4.62
Min.	64.29	28.47	71.82	92.64	4.07	0.89	0.36	0.00	1.58	0.03	1.23	1.46	14.34	2.42
Av.†	67.73	32.27	74.87	93.51	5.05	1.21	0.45	0.01	1.99	0.04	1.45	1.66	16.19	3.52
Beets														
Max.	70.79	39.56	90.67	92.74	1.32	1.32	0.06	0.03	1.06	0.03	1.17	1.12	12.83	7.74
Min.	60.44	29.21	84.52	89.80	0.84	0.69	0.03	0.00	0.69	0.02	0.54	0.48	6.29	5.39
Av.†	65.30	34.70	88.34	91.31	1.02	0.88	0.04	0.01	0.85	0.02	0.80	0.77	8.95	6.60
Carrots														
Max.	75.24	35.78	92.48	94.18	0.67	0.34	0.60	0.02	0.97	0.07	1.10	1.00	5.87	5.43
Min.	64.22	24.75	90.86	93.29	0.49	0.19	0.37	0.00	0.70	0.03	0.82	0.62	5.03	4.74
Av.†	69.49	30.51	91.54	93.70	0.58	0.27	0.51	0.00	0.84	0.05	0.95	0.80	5.59	5.18
Corn, whole kernel														
Max.	72.50	35.06	76.56	93.97	2.86	0.56	0.98	0.05	1.40	0.04	1.03	1.11	20.70	9.40
Min.	64.94	27.50	73.99	89.15	2.44	0.45	0.59	0.01	0.88	0.03	0.75	0.73	18.16	4.56
Av.**	68.29	31.71	75.48	91.20	2.71	0.49	0.73	0.02	1.12	0.04	0.91	0.95	19.05	7.30
Peas														
Max.	66.49	38.45	83.00	93.00	5.21	1.68	0.70	0.06	2.73	0.06	1.07	1.22	18.80	6.49
Min.	61.55	33.51	72.40	91.25	3.02	1.10	0.42	0.04	1.76	0.01	0.88	0.94	10.73	4.44
Av.**	63.88	36.12	76.69	92.17	4.54	1.31	0.58	0.05	2.26	0.03	1.01	1.09	14.92	5.35
Spinach														
Max.	74.22	32.88	91.46	96.57	3.30	0.59	0.68	0.01	1.10	0.06	2.08	1.65	2.89	2.15
Min.	67.12	25.78	90.34	95.84	2.78	0.47	0.47	0.00	0.93	0.02	1.72	1.39	2.06	1.40
Av.†	71.62	28.38	90.83	96.18	3.06	0.52	0.62	0.00	1.02	0.03	1.92	1.53	2.53	1.75

* Carbohydrates (other than crude fiber) by difference.
** Average of 5 samples, each consisting of 4 cans.
† Average of 5 samples, each consisting of 6 cans.

[1] Scientific Paper No. A93, Contribution No. 1952 of the Maryland Agricultural Experiment Station (Department of Horticulture). This work was a part of the National Canners Association —Can Manufacturers Institute Nutrition Program. Received for publication September 23, 1944.

with iso-amyl alcohol; a curve was prepared by plotting the percentage transmittance of a series of known solutions of pure iron on a spectrophotometer at 490 mμ. This was then obtained likewise for each sample, and the amount of iron calculated by reference to the standard curve.

RESULTS

The proximate compositions of the solid and liquid portions of the canned vegetables appear in Table 1; the mineral compositions in Table 2; the proportions of each nutrient in the solid and liquid portions, expressed as percentage of all of the particular nutrient found in the entire can, in Table 3. Because of the limited number of samples, no clear-cut differences in nutrient distribution could be ascribed to different types of the same product. Thus, the average values in the tables represent both all-green and white asparagus, white and yellow whole kernel corn, and early and sweet varieties of peas. Some of these results are summarized as follows:

Proteins. The protein content of the liquid portion varied from the relatively small quantities of 6 and 8 per cent, respectively, for spinach and corn, to almost one third of the total protein content in the beet samples. Only 10 per cent of the canned Lima bean protein was found in the liquid portion, while that in the liquid portion of canned peas, asparagus, beans, and carrots approximated 15 per cent of all the protein in the respective canned products. The results indicate that the proteins of canned corn and canned spinach are largely insoluble, the proteins of canned beets almost entirely water or brine-soluble, while those in the other products fall between these limits in degrees of solubility.

Fat and Fiber. Since both these components are water-insoluble, only that in the solid particles which might pass through the 10-mesh screen would be found in the liquid portion.

TABLE 2

Mineral constituents of solid and liquid portions of some canned vegetables

PRODUCT	CALCIUM		PHOSPHORUS		IRON*	
	Solid	Liquid	Solid	Liquid	Solid	Liquid
	%	%	%	%	*p.p.m.*	*p.p.m.*
Asparagus						
Max.	0.025	0.019	0.066	0.027	29	24
Min.	0.015	0.015	0.023	0.011	2	2
Av.**	0.021	0.017	0.042	0.019	11	8
Beans, green						
Max.	0.045	0.017	0.027	0.017	42	27
Min.	0.029	0.007	0.013	0.009	8	3
Av.**	0.036	0.012	0.023	0.013	17	10
Beans, Lima						
Max.	0.036	0.026	0.089	0.094	24	19
Min.	0.019	0.019	0.069	0.048	14	14
Av.**	0.029	0.023	0.077	0.066	17	16
Beets						
Max.	0.022	0.006	0.042	0.038	8	6
Min.	0.019	0.004	0.021	0.022	5	3
Av.**	0.021	0.005	0.031	0.026	7	4
Carrots						
Max.	0.030	0.015	0.033	0.022	9	14
Min.	0.019	0.009	0.020	0.013	3	5
Av.**	0.026	0.012	0.026	0.018	6	7
Corn, whole kernel						
Max.	0.006	0.004	0.061	0.056	7	6
Min.	0.003	0.002	0.046	0.042	5	3
Av.**	0.005	0.003	0.052	0.048	6	4
Peas						
Max.	0.044	0.015	0.088	0.061	28	17
Min.	0.018	0.009	0.048	0.023	16	11
Av.**	0.032	0.012	0.077	0.048	21	14
Spinach						
Max.	0.169	0.003	0.041	0.043	26	8
Min.	0.097	0.001	0.022	0.019	17	4
Av.†	0.124	0.002	0.033	0.032	20	7

* Iron in parts per million.
** Average of 5 samples, each consisting of 4 cans.
† Average of 5 samples, each consisting of 6 cans.

TABLE 3

Percentage of total nutrients of entire can found in liquid portion

PRODUCT	PROTEIN	FAT	FIBER	ASH	CARBOHYDRATES*	CALCIUM	PHOSPHORUS	IRON
Asparagus								
Max.	20.4	6.0	8.4	38.3	30.8	37.2	25.3	34.8
Min.	10.2	2.6	2.0	27.9	25.0	22.6	15.4	20.8
Av.**	14.3	4.4	3.9	33.1	27.6	30.3	19.5	27.0
Beans, green								
Max.	17.7	††	6.6	38.6	25.3	19.4	31.4	29.1
Min.	10.4	††	2.2	35.1	19.2	10.4	23.0	18.4
Av.**	15.4	††	4.4	37.2	22.7	16.6	26.7	24.5
Beans, Lima								
Max.	12.4	2.0	1.8	39.5	10.9	32.3	30.7	38.1
Min.	7.7	0.0	0.6	31.4	8.6	23.1	25.3	26.6
Av.†	10.3	0.9	0.7	35.9	9.2	27.9	28.4	32.3
Beets								
Max.	35.1	††	1.9	40.2	35.9	12.6	39.6	29.3
Min.	27.2	††	1.0	28.2	22.7	9.4	26.4	15.0
Av.†	31.2	††	1.5	31.7	28.7	11.1	31.4	24.9
Carrots								
Max.	22.3	††	4.8	33.8	33.9	21.2	31.7	71.5
Min.	10.7	††	1.6	21.7	24.2	13.5	16.1	20.6
Av.†	16.8	††	2.6	26.9	28.9	17.2	23.5	33.4
Corn								
Max.	9.6	4.2	2.4	37.2	17.8	26.1	37.9	35.1
Min.	6.6	0.6	1.1	27.1	10.6	16.5	24.6	20.6
Av.**	7.8	1.5	1.6	32.6	14.9	22.7	30.1	26.5
Peas								
Max.	18.6	5.7	1.4	40.3	27.4	23.0	29.5	35.7
Min.	11.1	3.6	0.3	34.8	13.2	14.8	23.2	20.4
Av.**	14.3	4.6	0.9	38.1	17.4	17.5	25.8	27.7
Spinach								
Max.	7.6	††	2.7	29.0	27.9	1.1	32.9	14.3
Min.	5.5	††	0.8	21.4	19.5	0.3	23.3	9.3
Av.†	6.3	††	1.3	23.8	22.1	0.7	27.6	11.5

* Carbohydrates (other than crude fiber) by difference.
** Average of 5 samples, each consisting of 4 cans.
† Average of 5 samples, each consisting of 6 cans.
†† Insignificant quantity.

Ash. The ash content in the liquid was approximately the same as in the solid portion, which was not unexpected since a large part of the total ash of many canned vegetables consists of the added salt.

Carbohydrates. The carbohydrate fraction in the liquid portion varied considerably, both with the product and the individual sample: in Lima beans only 9 per cent of the total carbohydrates was in the liquid portion; in corn, about 15; in peas, 17; in spinach and green beans, about 22 per cent; while that in the liquid portion of asparagus, beets, and carrots averaged well over 25 per cent of the total carbohydrate content of the entire can. The variability among samples of peas was especially pronounced, with 27 per cent of the total carbohydrate in the liquid for

a sample of very young peas and only 13 per cent for one decidedly more mature.

Calcium. The relative distribution of calcium between the liquid and solid portions varied more than for any other constituent In asparagus and Lima beans, and to a less degree in corn, calcium was freely dispersed in the liquid portion, approaching even the concentration of calcium in the solid portion. In spinach, on the other hand, the calcium in the liquid portion was negligible in quantity. Calcium in beets also tended to be insoluble, while that in beans, carrots, and peas showed evidence of being at least partly soluble in the liquid canning medium.

Phosphorus. A large portion of the phosphorus content of all the canned vegetables analyzed was found in the liquid portion, being especially high in spinach and beet liquids, in which concentrations approached those in the solid portions.

Iron. Iron was freely distributed in the liquid portions of all but the spinach samples.

DISCUSSION

It is evident that the relative amounts of nutrients in the liquid portions of canned vegetables vary widely, not only among products but even among samples of the same product. A complete explanation of these variations cannot be given on the basis of the limited data presented. One generalization, however, may be made: namely, that the liquid portion rarely exceeds one third of the entire can contents. Similarly, any specific nutrient was rarely present in the liquid portion to a greater extent than one third of its total content in the can. Nutrients insoluble in water remained principally in the solid portions of the foods.

Nutrient Distribution and Solubility. In addition to providing direct information on the nutrient distribution, the data also indicate the degree of solubility of the various nutrients in water and salt solutions. It is obvious, for example, that the carbohydrates, largely starch and other highly synthesized polysaccharides in products such as Lima beans and corn, are less readily dissolved into the surrounding liquor than those of beets or asparagus which consist to a much greater extent of readily soluble sugars. If the corn samples had consisted of field rather than sweet corn, the carbohydrate content of the liquid undoubtedly would have been even lower.

Variability among individual samples may be partly explained on a similar basis: less mature samples are likely to have a higher sugar:starch ratio than the more mature, consequently a greater portion of the carbohydrate in the former would be dissolved out into the liquor.

The presence of some mineral in the liquor in a high concentration might also indicate that the mineral is readily soluble; its absence, that the mineral is tied up chemically and therefore not readily available. Calcium is a case in point, the absence of which in spinach liquor is probably due to the presence of oxalic acid which ties up the calcium in the form of calcium oxalate (2).

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The Dietitian in an Evacuation Hospital

July 20, 1944

When I joined the outfit I was their first dietitian with the exception of one on detached duty for six weeks in Africa, so I took over all three messes—officers, patients and detachment, and have kept them ever since.

We use the rectangular food boxes with five containers. During the winter each ward tent had a stove and when the ward men brought the food box over to the ward, they filled the box with hot water, thereby keeping the food warm but not as hot as we would wish. The reason we are unable to heat the water in the kitchen is that we have four fire units under G.I. cans for washing and it takes all the hot water for the dishes. To heat one can takes 1½ hours and we would never be able to fill the boxes with water and have sufficient hot water for the kitchen.

I make out regular chow box slips for the kitchen, listing the number of servings and also all the servings for special diets and particular requests that I can fill. Then the kitchen crew fills the boxes and I check them for the specials which are put on top of the cart. We have the aluminum cups (Q.M. equipment) and use them for the specials and cap them with another cup. On the medical wards where we get as many as 15 soft diets, we use the containers from the marmite cans or the food box containers from boxes not in use. Some wards have only three or four trays (that happens occasionally), and the ward men have the trays fixed in he kitchen and carry them back to the wards. Other than regular, soft and liquid diets, the scope of diets here is limited. I have had about six ulcer diets and two diabetic diets but these patients have been evacuated to general hospitals within 24 hours after their arrival. Last fall I had as many as 250 jaundice diets at one time, but of late I usually carry one to two diets. We feed all diets on the ward, only serve regular diet in the mess hall. Whereas the enlisted men are served cafeteria-style, I do have table service (in the same mess hall) for the ambulatory officers.

I'm proud of all my messes and fully appreciate the cooperation I receive from the men in the kitchens. They are willing to try out my ideas and I'm willing to try their ideas. We soon find out whether we have hit on a winner or have an unsuccessful experiment. We do receive ice and so are able to serve iced tea, coffee, and lemonade. Last year it was impossible to make the detachment and patients drink lemonade. Since we can now make it ice cold, they drink it very well and ask for seconds. Most of the time in the past I used to mix the lemon powder in vegetable salads, in cold tomatoes or in hot tomatoes, in spinach prior to serving and in lemon pie. Pickled beets also received a dose of lemon powder. Purée has come through, but very infrequently. We have made our own by putting the vegetables through a meat grinder and then mashing up well. We have at times had as many as 90 soft diets and no purée vegetable other than that which we made.—*Excerpts from a letter to Major Helen C. Burns from Lt. Sally Brightman, M.D.D.*

Mess Management in the U. S. Army, 1916–18

A mess account on Form 74 will be kept by the noncommissioned officer in charge. It should be filed at the end of every month with the retained hospital fund papers for that month. Inordinate gains in the plus column would indicate undue economy in the diet, while, on the other hand, continual losses in the minus column would signify mismanagement of the hospital fund or improper care of the food supplies. The commanding officer of the hospital should inspect this record at frequent intervals, with a view to keeping constantly informed in this respect. . . .When the number of sick requiring special diet is large, the commanding officer of the hospital may establish one or more diet kitchens for the preparation of their food, under the immediate direction of such skilled dietists as are available. Competent dietists belonging to the Nurse Corps may be assigned to this duty. Rules for the management of diet kitchens will be prescribed by the commanding officer of the hospital according to the particular needs of each case.—*Manual for the Medical Department, United States Army, 1916 (corrected to June 15, 1918).*

Editor's Note: To the best of our knowledge, this was the first time any reference was made to the dietitian (*sic* dietist) in manuals of the Medical Department, U.S.A.

THE NUTRITIVE VALUE OF CANNED FOODS:

X. FURTHER STUDIES ON RIBOFLAVIN, NIACIN AND PANTOTHENIC ACID[1]

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IN ORDER to secure additional information on the nutritive value of canned foods, a large number of canned food samples was collected from the 1943 pack and distributed to certain university laboratories for assay. It is the purpose of this paper to report the results of the riboflavin, niacin, and pantothenic acid assays on these samples and to compare them with the values obtained on similar samples during the previous year.

EXPERIMENTAL

The method of collection and distribution of samples was essentially as described by Clifcorn (1). When received at this laboratory the samples were stored in a basement room until assayed, at a temperature ranging from 22 to 26° C. for the duration of the work, September 1943 to June 1944.

Preparation of Samples. The contents of all cans taken for one sample (6 consumer-size cans or 1 to 3 No. 10 cans) were combined and mixed, and the solids separated from the liquid by draining on a screen until the liquid ceased to flow from the solids. Apricots, asparagus, beets, grapefruit segments, peaches, pears, and tomatoes were cut into smaller pieces before the solid and liquid portions were separated. Prunes were treated in a similar manner except that pits were removed and only the edible portion analyzed. The solids were weighed and the liquid volume determined. One tenth of the solid and liquid portions was recombined, and this reconstituted aliquot was blended with 2 to 3 cc. chloroform in a Waring Blendor.

The various canned juices (tomato, grapefruit, and orange) were not homogenized in the Waring Blendor, but the contents of the individual cans were simply stirred together. The desired aliquot was removed and 2 to 3 cc. chloroform added.

Sardines in tomato sauce were drained on the screen and 10 per cent aliquots of liquid and solids recombined. Sufficient water was added to the recombined product to ensure the formation of a thick slurry on homogenization. The oil was drained off from oil-packed sardines and discarded and the sardines blended with water as above. Sweet potatoes were not drained but were homogenized with water directly.

ASSAY METHODS

Riboflavin. An amount of homogenized material estimated to contain about 10.0 μg. riboflavin was suspended in 50 cc. 0.1 N HCl and autoclaved 15 min. at 15 lb. pressure. Samples were prepared for assay according to the method of Strong and Carpenter (2) and analyzed by the microbiological method of Snell and Strong (3). Each sample was set up at 5 levels with one tube at each level.

Niacin. Samples were prepared in the same manner as reported in a previous communication (4). The assay method of Snell and Wright (5) was employed with the modified medium of Krehl, Strong and Elvehjem (6). Each sample was set up at 5 levels with one tube at each level.

Pantothenic Acid. Samples were prepared and assayed according to the procedure of Neal and Strong (7) with the following modifications:

(a) Material estimated to contain about 3.0 μg. pantothenic acid was weighed out and digested with an amount of clarase equal to the dry weight of the sample. The sample and clarase were suspended in 50 cc. water buffered at *p*H 4.8, and incubated 72 hr. at 37° C.

(b) Vitab supplement was omitted from the medium.

(c) A solution of niacin, p-aminobenzoic acid, thiamin chloride, and pyridoxine hydrochloride at a level of 1 μg. per tube was substituted for the yeast supplement.

(d) A folic acid concentrate (potency 5000) (8) was added to the basal medium at a level of 0.02 μg. per tube.[2] The samples were set up at 5 levels with 1, 2, 3, 4, and 5 cc. of the test suspension per tube, but only one tube was used at each level. Duplicate assays were run on different days.

RESULTS AND DISCUSSION

The results obtained are summarized in Table 1.

Riboflavin. Variations in the amount of riboflavin found in different samples of any one product were in general smaller in samples of the 1943 products than in samples of the products collected in 1942. In fact the range was approximately twofold or less in all of the samples analyzed, except grapefuit juice where the range was threefold. However, in that instance the absolute values at the lower limit of the range were so low that there is some doubt as to the accuracy of these particular results.

The ranges of riboflavin values obtained on the 1942 and 1943 packs are compared in Table 1. It should be kept in mind that in most cases fewer samples were analyzed in 1943 than in 1942. In most instances the ranges obtained on the 1943 samples are smaller and fall within the limits of those reported for 1942, with the following exceptions: apricots, lower and less variation; grapefruit juice, lower; Alaska peas, slightly greater range; Italian prunes, lower; sardines in oil, higher; sardines in tomato sauce, higher and less variation; spinach, higher and less variation. As expected, the riboflavin content of canned fruits and vegetables was found to be low.

Niacin. The niacin values for the products analyzed were considerably higher than those of the other vitamins. The ranges were approximately threefold or less for all of the products assayed with the exception of Lima beans which had a sevenfold range, and green beans, beets and spinach which had a fourfold range. Lima beans was the only product on which both lower and higher values were found than the extremes obtained in 1942. Substantially lower values were obtained on certain samples of white asparagus, Lima beans, clingstone peaches, and tomato juice, whereas sardines packed in tomato sauce, and pears gave maximum values somewhat higher than those from the 1942 pack. The number of samples analyzed for niacin was less in this study than that of the previous year.

Pantothenic Acid. Most of the canned foods analyzed were found to contain 2 to 10 times as much pantothenic acid as riboflavin. Spinach, however, had about twice as much; sardines and turnip greens about equal amounts. The extent of the range of pantothenic acid values is greater than for riboflavin. The highest value for cherries was 11 times the lowest, while Lima beans showed a sevenfold range, and green beans, carrots, and sardines in tomato sauce, a fivefold range, and the rest of the samples about threefold. There seems to be no obvious explanation for the wide range encountered in the analyses of the cherry samples. Two of the values were very low and two were high. Ranges obtained for the other two vitamins on this product were small. In many cases the ranges for the 1943 products, as in the case of riboflavin, were smaller and fell

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[2] The authors wish to express their appreciation to Prof. R. J. Williams for the gift of the folic acid concentrate.

TABLE 1

*Riboflavin, niacin and pantothenic acid content of canned foods**

SAMPLES	RIBOFLAVIN				NIACIN				Ca PANTOTHENATE			
	No. of samples	Average	Range	Range 1942**	No. of samples	Average	Range	Range 1942†	No. of samples	Average	Range	Range 1942**
		mg./100 gm.				*mg./100 gm.*				*mg./100 gm.*		
Apricots, unpeeled halves	5	0.013	0.010–0.014	0.012–0.039	5	0.26	0.18 –0.36	0.20–0.48	5	0.089	0.070–0.11	0.045–0.20
Asparagus, white	4	0.053	0.051–0.056	0.044–0.073	4	0.60	0.55 –0.67	0.63–0.88	3	0.13	0.10 –0.19	0.092–0.16
Asparagus, all green	12	0.087	0.065–0.12	0.039–0.19	12	0.75	0.50 –1.0	0.22–1.19	6	0.20	0.16 –0.22	0.072–0.43
Beans, green, cut	6	0.042	0.036–0.050	0.018–0.065	6	0.29	0.11 –0.47	0.18–0.60	5	0.072	0.030–0.14	0.023–0.11
Beans, Lima, green	27	0.037	0.022–0.053	0.023–0.062	6	0.48	0.11 –0.83	0.32–0.77	5	0.11	0.03 –0.21	0.068–0.17
Beets	6	0.020	0.016–0.021	0.011–0.059	6	0.20	0.11 –0.43	0.06–0.28	6	0.10	0.070–0.19	0.045–0.12
Blackberries	6	0.019	0.018–0.022		6	0.21	0.17 –0.25		6	0.078	0.070–0.088	
Blueberries	6	0.014	0.012–0.015		6	0.19	0.16 –0.23		6	0.068	0.050–0.10	
Carrots	5	0.019	0.015–0.025	0.009–0.042	5	0.37	0.24 –0.50	0.19–0.49	5	0.11	0.040–0.20	0.093–0.21
Cherries, red sour, pitted	4	0.016	0.014–0.020		4	0.19	0.17 –0.21		4	0.12	0.02 –0.22	
Corn, white, cream style	7	0.049	0.043–0.054		12	1.08	0.77 –1.5		8	0.21	0.14 –0.26	
Corn, yellow, cream style	9	0.052	0.041–0.058		21	0.94	0.50 –1.3		9	0.22	0.10 –0.32	
Corn white, whole kernel	8	0.051	0.044–0.056	0.027–0.064	32	1.0	0.54 –1.2	0.46–1.50	8	0.22	0.17 –0.32	0.10 –0.50
Corn yellow, whole kernel	10	0.052	0.047–0.066	0.025–0.072	57	0.89	0.44 –1.3	0.53–1.06	10	0.18	0.10 –0.28	0.094–0.32
Grapefruit juice	9	0.010	0.005–0.016	0.010–0.033	9	0.19	0.11 –0.24	0.08–0.49	5	0.17	0.090–0.26	0.065–0.17
Grapefruit segments	4	0.014	0.013–0.016	0.008–0.039	4	0.19	0.14 –0.23	0.13–0.35	4	0.16	0.12 –0.18	0.063–0.19
Kraut	6	0.041	0.032–0.068		6	0.11	0.090–0.13		6	0.093	0.081–0.11	
Mushrooms	5	0.19	0.15 –0.24		5	1.6	1.4 –1.9		5	0.94	0.68 –1.1	
Orange juice	16	0.018	0.014–0.022	0.012–0.038	15	0.23	0.17 –0.28	0.18–0.30	10	0.13	0.060–0.20	0.081–0.17
Peaches, clingstone, halves	3	0.015	0.013–0.017	0.013–0.030	9	0.41	0.22 –0.52	0.48–1.18	6	0.049	0.020–0.070	0.017–0.065
Peaches, freestone, halves	2	0.015	0.014–0.016	0.009–0.034	7	0.51	0.29 –0.72	0.34–0.90	4	0.070	0.060–0.080	0.020–0.13
Pears, halves	3	0.010	0.009–0.010	0.009–0.032	4	0.23	0.13 –0.46	0.06–0.28	8	0.025	0.018–0.040	0.008–0.041
Peas, Alaska	29	0.055	0.037–0.073	0.037–0.064	29	0.88	0.46 –1.2	0.68–1.04	10	0.17	0.070–0.27	0.069–0.18
Peas, sweet wrinkled varieties	57	0.061	0.047–0.078	0.025–0.10	56	0.91	0.55 –1.3	0.42–2.69	11	0.13	0.080–0.21	0.081–0.26
Peppers, sweet red	2	0.081	0.080–0.082		2	0.70	0.45 –0.95		2	0.10	0.088–0.12	
Pimentos	1	0.065			1	0.38			1	0.18		
Potatoes, sweet	5	0.043	0.037–0.051		5	0.49	0.26 –0.80		5	0.43	0.37 –0.49	
Prunes, Italian	8	0.013	0.011–0.016	0.019–0.032	8	0.36	0.30 –0.49	0.19–0.47	6	0.10	0.080–0.11	0.027–0.085
Sardines, in oil	6	0.17	0.14 –0.21	0.090–0.15	6	4.0	3.4 –5.0	2.92–7.15	6	0.26	0.20 –0.39	0.44 –0.65
Sardines, in tomato sauce	6	0.29	0.26 –0.31	0.12 –0.23	6	6.2	4.6 –8.3	2.36–5.40	6	0.39	0.12 –0.59	0.41 –0.58
Spinach	25	0.11	0.064–0.15	0.024–0.13	25	0.34	0.15 –0.64	0.16–0.64	10	0.059	0.040–0.080	0.021–0.14
Tomatoes	21	0.024	0.014–0.032	0.011–0.050	20	0.70	0.51 –0.94	0.41–0.97	7	0.23	0.20 –0.26	0.11 –0.44
Tomato juice	61	0.027	0.017–0.039	0.009–0.046	60	0.81	0.42 –1.0	0.55–1.77	7	0.30	0.25 –0.36	0.17 –0.39
Turnip greens	5	0.090	0.070–0.11		5	0.58	0.31 –0.96		5	0.068	0.054–0.080	

* Based on the entire contents of the can except in the case of oil-packed sardines and Italian prunes where the oils and pits, respectively, were discarded.

** Values as reported by Snell *et al.* (10).

† Values as reported by Ives *et al.* (4).

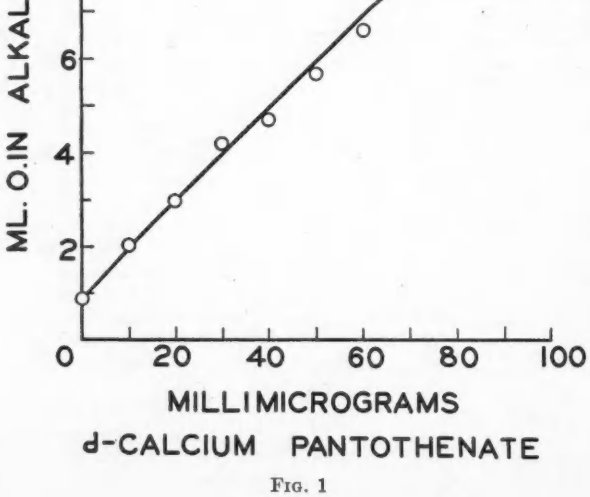

FIG. 1

within the limits of those obtained on the 1942 pack. Sardines in oil had a lower and smaller range; sardines in tomato sauce, Alaska peas, and grapefruit juice, a larger range; and Italian prunes a higher and smaller range.

In general, there is excellent agreement of values for these vitamins between the two seasons. As far as this work is concerned, the variation of vitamin content from year to year was not greater than the variation which would be expected between samples of the same product canned during the same growing season.

There was no difficulty encountered in assaying these samples for pantothenic acid by the modified procedure described above. When attempts were made to follow the procedure of Neal and Strong (7) exactly, difficulty was encountered in the preparation of the Vitab supplement, in that the recommended charcoal treatment failed to remove all of the pantothenic acid. Vitab contains approximately 200 μg. pantothenic acid per gram and in order to prepare a satisfactory supplement for this assay, the pantothenic acid content must be reduced to 0.13 μg. per gram or less, which is a reduction of at least 99.94 per cent of the total content. Since the samples analyzed by the modified procedure showed no drift in values between levels in the assay tubes, the omission of the Vitab supplement was considered permissible.

A mixture of crystalline vitamins was substituted for the yeast supplement since this substitution gave a uniformly lower blank titration on the standard curve and hence a

greater range of titration values for the assay. The levels of the vitamins were lower than those used by others (9).

The peptone solution was assayed for folic acid and the amount contributed by this supplement was found to be marginal for *Lactobacillus casei*; therefore the folic acid concentrate was added to the medium. Figure 1 demonstrates that the standard curve obtained on this medium is linear up to 0.06 μg. pantothenic acid. The increment of titration was approximately 0.9 cc. 0.1 N NaOH per 0.01 μg. pantothenic acid in the linear portion of the curve.

SUMMARY

Average values and ranges for the riboflavin, niacin, and pantothenic acid content of 36 commercially canned foods from the 1943 pack are reported. From 1 to 61 samples of each product were analyzed. The values obtained are compared with similar values reported for these products from the 1942 pack. In general, there is excellent agreement of ranges between the two seasons for the three vitamins determined.

A slight modification of the pantothenic acid assay is reported.

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Work of Dietitian's Aides, Memphis-Shelby County Chapter, American Red Cross

In September 1944, the Memphis-Shelby County Chapter of the American Red Cross, Memphis, Tenn., added to the staff a dietitian, Mrs. Jane Smith Henderson, as director of Nutrition Service. By the first of November two classes had completed the standard nutrition course, which is a prerequisite of the Dietitian's Aide course. The first class for Dietitian's Aides started with 12 members, all of whom completed the course. At the end of 5 months, 150 Dietitian's Aides had been serving in local hospitals and had given 1350 hours of volunteer service. Serving on the Volunteer Dietitian's Aide Committee of the Chapter, along with Mrs. Henderson and several other professional and lay members, is Elizabeth Dominic, president, Memphis Dietetic Association.

The Memphis-Shelby County Chapter was the first chapter to receive a request for Dietitian's Aides from a military hospital. The aides are now serving at Baptist Memorial, Kennedy General, and the Fourth Ferrying Hospital. On March 25, Palm Sunday, an emergency call came for volunteers to assist in feeding 250 litter patients at Kennedy General Hospital. The aides reported for duty. The men were temporarily on stretchers in the barracks before being moved to the hospital proper. They were hungry. The aides served breakfast, which consisted of fruit juice, cereal, boiled eggs, bacon, toast, coffee, and milk. One of the aides asked the medical officer why he ordered boiled eggs, and he said because he wanted the men to see the shells and to know that they were not dehydrated. A few hours later they were very hungry again. Lunch, consisting of roast beef sandwiches with plenty of fresh lettuce and tomato, ice cream, and milk, was served. The menu was necessarily simple because the patients were still in the barracks.

One of the aides is assigned to supervise the feeding of paralytic patients. She reports that the medical officer has asked her to be responsible for the execution of the selective menu plan, and told her that nothing would help the morale of the patients more than wholesome food. Interviewing a young officer she asked him if he could think of anything he would like to eat. He replied, "Do you mean anything?" She said, "Yes, we shall try to get it." He said, "I'd like some sauerkraut juice." He got it.

One aide reported the story of a young soldier in her ward who suffered a severe abdominal wound. The patient complained of not having any appetite. The doctor ordered frequent small feedings and suggested that a Dietitian's Aide visit him. The patient expressed a wish for some hot corn bread, and the next morning the Dietitian's Aide appeared at the hospital armed with her own corn meal, eggs, buttermilk, and pans. She obtained permission from the dietitian to use the ward kitchen oven, and she now has a long line of wheel-chair patients waiting to get some of her hot corn bread.

Some time ago an emergency call came for the workers who were giving only 4 hours a week to give 8 hours one day. They unanimously agreed, and one of these volunteers has shown such aptitude in her work that she now is directing the new aides in their orientation training in dietary procedure in that hospital.

The Dietitian's Aide Corps has been highly complimented for its cooperation with the members of other volunteer special services in the hospitals.

Historical Notes on Diet

Dietetic treatment of sickness goes back to the first man who got ill from some disease which meddled with his appetite, so we may conclude that the beginning of dietetics was founded on appetite and on this alone. From this the "science" of dietetics departed until about the middle of the nineteenth century, when appetite and inclination were not only ignored, but considered antagonistic. We have seen a letter written by one eminent physician of 50 years ago to another physician castigating a third for allowing a patient "to eat and drink what he likes." At that time dietetics was almost entirely proscriptive. In general all persons who were sick were denied all food except milk. One result of this was that the British people developed a distaste for milk which they are only now beginning to lose. American scientific medicine is younger than ours and had not the nothing-but-milk-in-sickness tradition, so Americans are big milk drinkers. Some years ago they showed that the dislike of milk and the alleged allergy to it, so much more frequent in British than in American children, was mostly due to the association of milk with sickness, especially in such conditions as sore-throat, in which milk develops a repulsive taste. In the last quarter of the nineteenth century the nothing-but-milk treatment was most rigidly enforced in typhoid, upon the utterly false premise that the residue of milk was least irritating to the ulcerated ileum. The South African war gave the death-blow to this tradition. In that war the deaths from typhoid were more numerous than those from all other conditions, including wounds. As fresh milk was not available, the typhoid cases were fed on condensed milk, with a resulting fatality which suggested that the treatment was more fatal than the disease.

Advances in the science of nutrition since that time, have shown clearly that for vitality we require a certain amount of many substances in all circumstances, and that the real difficulty in feeding the sick was to cover these needs. This completely altered the dietetic treatment of sickness and constituted a return, with modifications, to the primitive idea that in sickness we should be fed according to our appetite. Dietetics has become prescriptive.—*Excerpts from The Medical Officer, January 27, 1945.*

CAROTENE AND ASCORBIC ACID IN FRESH AND SALTED VEGETABLES[1]

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THE widespread advocation of the preservation of food with salt, stimulated by the wartime food situation, has enhanced the need for information on the retention of nutrients in salted foods.

Lan-chen Kung (1) reported on changes in the calcium and riboflavin content of fresh vegetables treated with saturated salt solutions. Miller (2, 3) found that cabbage pickled in salt lost 50 per cent of its original vitamin B content, yet when treated with salt plus rice bran, a product very rich in B vitamins, the cabbage adsorbed appreciable amounts of these vitamins from the bran. Chen (4, 5) found losses in thiamin in fresh turnips, Chinese cabbage, and lettuce stems pickled in salt. Cheng and Tao (6) found great losses in the vitamin C content of salted Chinese vegetables and fruits. Lintzel *et al.* (7) reported extensive or complete loss of ascorbic acid in various pickled vegetables. Diller (8) reported good vitamin C retention in pickled white cabbage, accompanied by considerable destruction of carotene and thiamin.

Fellers (9) recently reported losses of 75 to 86 per cent of the water-soluble vitamin content of salt-cured cucumbers, and extensive destruction of carotene and ascorbic acid during storage of the salted vegetables.

The purpose of this work was to study the changes in carotene and ascorbic acid content of vegetables preserved by addition of a quantity of salt sufficient to inhibit the growth of micro-organisms causing spoilage or fermentation.

METHOD OF PRESERVATION AND SAMPLING

The vegetables were prepared as follows: roots of dandelion greens were trimmed; asparagus stalks left unbroken, except for tougher ends which were discarded; peas shelled; green beans trimmed and cut into 1-in. pieces; broccoli cut into individual stalks, and the fibrous ends removed; spinach and endive tied in bunches. Brussels sprouts were left as whole heads. After this preliminary preparation, the vegetable was washed in cold tap water, drained, then weighed and one quarter of its weight in the form of bulk commercial salt, was measured out for addition. A layer of vegetable, about 2 in. thick, was packed in the bottom of a 10-gal. crock, followed by a layer of salt. Similar layers were alternately packed in the vessel, care being taken to distribute the salt evenly throughout the layers. Several thicknesses of cheesecloth were spread over the top layer, and a hardwood board coated with paraffin placed over the cloth. A clean stone weighing approximately 10 lb. was set on the board as a weight.

The crocks were placed in a refrigerator at a temperature of 5°C. At the end of 24 hr., if sufficient brine to cover the vegetable had not formed, a strong brine made by dissolving 1 lb. salt in 2 qt. distilled water was added to cover. After the adjustment of the brine, the cloth was removed and a layer of melted paraffin of about 1-in. thickness poured over the exposed surface around the board.

Samples were removed at intervals by breaking the paraffin layer, which was then remelted and again poured over the exposed surface.

For all analyses representative samples were cut and weighed out rapidly. Different amounts of each vegetable were used, depending on the estimated carotene and ascorbic acid content.

For the purpose of more uniform comparison of certain vegetables, specific parts rather than the entire plant were analyzed: stems of asparagus 2 in. directly below the tips; leaves of spinach from which the stems were removed; broccoli buds plus 1 in. of the stem directly below the bud; and the outer green leaves of endive.

DETERMINATION OF CAROTENE

The carotene content of dandelions, asparagus, spinach, peas, and green beans was determined colorimetrically. Analyses were run on the fresh and salted products after stated intervals of storage. Broccoli, endive, and Brussels sprouts were analyzed for carotene in the fresh state and after 3 mo. storage with salt. The moisture content was determined simultaneously by drying representative samples 5 hr. in an oven at 105°C.

The method for carotene analysis was that developed by Ellis and co-workers (10) as follows:

> The weighed sample of plant material is ground in a Waring Blendor with a petroleum ether-95 per cent ethyl alcohol mixture (100 parts petroleum ether to 75 parts ethyl alcohol). Fresh samples are blanched 3 min. in boiling water prior to blending (11).
>
> The suspension is filtered, using a Buchner funnel with suction, the residue and filter paper transferred to a Waring Blendor, and the extraction and filtration repeated 2 or 3 times until the precipitate is practically colorless.
>
> The combined filtrates are transferred to a separatory funnel and tap water added to effect the separation of the extract into 2 layers. The bottom alcohol-water layer, containing chlorophyll and some carotene, is drained off and re-extracted with petroleum ether. The combined petroleum ether extracts are then washed 3 or 4 times with tap water to remove traces of ethyl alcohol which, if present, interferes with the separation of carotene from the other pigments.
>
> After drying over anhydrous sodium sulfate, the petroleum ether solution of pigments is diluted with the solvent to the desired volume. Aliquots are then pipetted for adsorption on a column of cornstarch-hyflo-supercel (equal parts of each by volume). The adsorbent retains all the pigments except carotene, which passes through the column into a test tube below. After washing with petroleum ether until the solution passing through the column is colorless, the carotene extract is diluted to the original volume of the aliquot (25 ml.), and the colorimetric readings are taken.
>
> A colorimeter equipped with Corning filters No. 428 and 585 was used to determine the concentration of carotene. For calibration of the instrument pure beta-carotene was employed. In a standard curve of reference, the concentration of beta-carotene per cubic centimeter (abscissa) was plotted against the corresponding galvanometer scale readings (ordinates).

DETERMINATION OF ASCORBIC ACID

Broccoli, endive, and Brussels sprouts were analyzed for ascorbic acid in the fresh state and after 3 mo. storage with salt.

Ascorbic acid was determined by the modified indophenol or dye method (12–15) which consists of the extraction of the ascorbic acid from the food material in acid solution and the determination of the ascorbic acid present by titration with 2,6-dichlorophenol-indophenol.

RESULTS

The data obtained in this study are presented in Tables 1–4. Since brine formation in salted vegetables involves an osmotic process during which the plant loses water, the carotene and ascorbic acid contents are compared on a dry weight basis.

[1] The work on which this report is based was done at Cornell University in the Laboratory of Animal Nutrition under the direction of Dr. Clive M. McCay. Received for publication December 14, 1944.

As a result of salting greens, asparagus, spinach, peas, and green beans, appreciable amounts of carotene were destroyed (Table 1). This destruction increased with time of storage. In all the products assayed, except peas, the losses in carotene after 1 mo. storage were appreciable.

TABLE 1

Carotene content of fresh and salted vegetables, fresh weight and dry weight bases

SAMPLE	FRESH WEIGHT	DRY WEIGHT	TOTAL SOLIDS
	mcg./gm.	*mcg./gm.*	%
Dandelion greens			
Fresh	96.6	689.7	14
Salted			
1 mo.	66.8	222.5	30
2 mo.	64.0	213.3	30
7½ mo.	40.9	136.1	30
Asparagus			
Fresh	11.2	74.7	15
Salted			
1 mo.	11.0	39.3	28
2 mo.	10.0	35.7	28
7 mo.	6.2	21.3	29
Spinach			
Fresh	75.8	946.9	8
Salted			
1 mo.	77.5	298.1	26
2 mo.	79.5	294.4	27
7 mo.	68.0	215.9	27
Peas			
Fresh	6.0	20.0	30
Salted			
1 mo.	9.5	19.8	48
2 mo.	7.5	16.0	47
6 mo.	5.25	10.9	48
Green beans			
Fresh	5.5	45.8	22
Salted			
1 mo.	4.6	16.5	28
2 mo.	2.5	8.9	28
6 mo.	1.5	4.8	31
Broccoli			
Fresh	15.8	106.7	15
Salted			
3 mo.	2.6	46.8	27
Endive			
Fresh	25.6	256.7	10
Salted			
3 mo.	25.6	87.9	29
Brussels sprouts			
Fresh	5.8	36.9	16
Salted			
3 mo.	2.9	8.5	34

TABLE 2

Ascorbic acid content of fresh and salted vegetables, fresh weight and dry weight bases

SAMPLE	BEFORE H_2S TREATMENT		AFTER H_2S TREATMENT		TOTAL SOLIDS
	Fresh	Dry	Fresh	Dry	
	mcg./100 gm.				%
Broccoli					
Fresh	95.22	634.17	100.81	671.39	15
Salted					
3 mo.	.57	2.11	3.35	12.40	27
Endive					
Fresh	7.44	74.40	12.56	125.60	10
Salted					
3 mo.	.30	1.04	1.36	4.69	29
Brussels sprouts					
Fresh	141.76	886.00	144.90	905.63	16
Salted					
3 mo.	3.17	9.32	7.03	20.67	34

TABLE 3

Accumulative losses of carotene in salted vegetables, dry weight basis

SAMPLE	CAROTENE	LOSS
	mcg./gm.	%
Dandelion greens		
Fresh	689.7	—
Salted		
1 mo.	222.5	67.74
2 mo.	213.3	69.07
7½ mo.	136.1	80.27
Asparagus		
Fresh	74.7	—
Salted		
1 mo.	39.3	47.38
2 mo.	35.7	52.21
7 mo.	21.3	71.49
Spinach		
Fresh	946.9	—
Salted		
1 mo.	298.1	68.51
2 mo.	294.4	68.90
7 mo.	251.9	73.40
Peas		
Fresh	20.0	—
Salted		
1 mo.	19.8	1.00
2 mo.	16.0	20.00
6 mo.	10.9	45.50
Green beans		
Fresh	45.8	—
Salted		
1 mo.	16.5	63.97
2 mo.	8.93	80.57
6 mo.	4.84	89.52
Broccoli		
Fresh	106.7	—
Salted		
3 mo.	46.8	56.14
Endive		
Fresh	256.7	—
Salted		
3 mo.	87.9	65.76
Brussels sprouts		
Fresh	36.9	—
Salted		
3 mo.	8.5	76.96

TABLE 4

Losses of total ascorbic acid in salted vegetables after 3 mo. storage, dry weight basis

SAMPLE	ASCORBIC ACID	LOSS
	mcg./100 gm.	%
Broccoli		
Fresh	671.39	—
Salted		
3 mo.	12.40	98.15
Endive		
Fresh	125.60	—
Salted		
3 mo.	4.69	96.27
Brussels sprouts		
Fresh	905.63	—
Salted		
3 mo.	20.67	97.72

Greater losses in salted peas were evidenced after intervals of 2 and 6 mo.

The destruction of carotene in salted broccoli, endive, and Brussels sprouts after 3 mo. storage was fairly great.

As shown in Table 2, the destruction of ascorbic acid in broccoli, endive, and Brussels sprouts was practically complete after 3 mo. In order to determine the small amounts present it was necessary to use a weaker solution of indophenol than that used for the fresh material.

Results of the assays for carotene showed that the destruction of this provitamin is a continuous process (Table 3). For example, the percentage losses in dandelion greens after 1, 2, and 7½ mo. were approximately 68, 69, and 80, respectively. Salted spinach and green beans showed the same progressive loss. Over three fifths of the carotene content of these 3 vegetables was destroyed at the end of the first month.

The loss in peas after 1 mo. was only 1 per cent, but in 6 mo. it increased to 45 per cent. Asparagus salted 1 mo. lost 48 per cent of the carotene originally present, indicating an initial loss of only two fifths of the vitamin: but by the end of 6 mo. 71 per cent had been destroyed.

After 3 mo. storage approximately 56, 66, and 77 per cent of the carotene in salted broccoli, endive, and Brussels sprouts, respectively, was lost.

Table 4 shows that the retention of total ascorbic acid in salted broccoli, endive, and Brussels sprouts was extremely poor. In these 3 green vegetables more than 96 per cent of the original content of this vitamin was lost after 3 mo.

SUMMARY

There is considerable loss of carotene in vegetables preserved with salt. These losses increase with time of storage. In 6 to 7½ mo., approximately 80 per cent of the carotene in dandelions was destroyed, 71 per cent in asparagus, 73 per cent in spinach, 46 per cent in peas, and 90 per cent in green beans. Carotene losses in broccoli, endive, and Brussels sprouts were 56, 66, and 77 per cent, respectively, after 3 mo.

The destruction of total ascorbic acid in salted vegetables after 3 mo. storage is of even greater magnitude. In broccoli, endive, and Brussels sprouts the losses ranged from 96 to 98 per cent. Therefore, from the standpoint of vitamin C content, salted products are of little value.

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Frozen Meals. A new frozen, ready-to-eat, complete meal now going to the Navy, but which will later be distributed in grocery stores, was revealed to the press recently by the W. L. Maxson Corporation, New York, according to the *Food Field Reporter*, April 16. The meals are precooked, individually packaged, will keep indefinitely, and require only 15 min. of final cooking in a specially designed, automatic oven before serving.

Typical menus include steak with French-fried potatoes and carrots; meat loaf, candied sweet potatoes, and spinach; beef stew, hot bread, and asparagus; ham steak, candied sweet potatoes, and green beans; and breaded veal cutlet, home-fried potatoes, and peas. Everything tastes as good, or better, than most regularly prepared meals, it is reported. In Navy transport planes the food is thawed and heated in an oven 20 by 14 by 19 in., weighing about 35 lb., and designed to operate on a 24-volt current generated by the airplane motor.

The oven is equipped to shield vegetables which require less cooking time than meat. A dehydrating feature removes a 3% moisture content, to keep such foods as French-fried potatoes crisp. During flight, food is stored in 2-in. balsam wood containers which hold the meals at a subfreezing temperature for 60 hr.—the time required for a round-trip European hop.

The company prepares the meals at a 1,000,000-lb. capacity quick-freezing plant in Queens Village, N. Y. Each vegetable and meat item is individually precooked the length of time required to have it finished in the final 15-min. cooking period before serving. Plates on which the meal is served are filled from conveyor belts and sealed in cellophane, the whole is then quick-frozen, and stored at zero until ready for use. After the war, it is stated, the specially designed oven will be available at about $30 for household use with gas or electricity. Frozen canapés, green salads of tomatoes and tossed vegetables, and hot mince pie are among items to be included in the menus. Distribution through retailers who will probably merchandise the ready-to-eat meals on a home delivery basis is planned for the postwar period.

Freezing Fish. Fish can be preserved successfully in freezer lockers or home freezing cabinets, according to USDA. Rules for freezing are: Chill fish promptly after catching. Pack in ice if necessary. As soon as possible, scale and dress fish, remove head, and wash. Small fish are usually frozen whole with fins and tail removed. Large fish are cut in pan-ready steaks or boneless strips for freezing. Wrap fish in moisture-vaporproof paper and seal carefully. Pull paper tightly to drive out air. Smooth package to pack snugly. Seal with a fold. Fold or twist ends. Tape ends and seams. Freeze promptly and store at 0°F. If desired, fish may be "glazed" instead of wrapped. To glaze, first freeze fish unwrapped. Then dip in near-freezing water. Let the ice film freeze. Dip again. Store at zero. Renew glaze every 1 to 5 months of storage.

Editorial

THE LITERATURE ON NUTRITION

Not the least of the many disruptions in the sad aftermath of war are the important libraries destroyed, chiefly in Great Britain and on the Continent. As a result there will be great need for replenishment of national, university, public, and other libraries, when these devastated areas begin again to tie together the torn threads of a once peaceful existence.

As a first step in replenishing these libraries an Inter-Allied Book Centre has been opened at Nos. 3–5 Salisbury Square, London E.C. 4, under the auspices of the Conference of Allied Ministers of Education.[1] The committee in charge appeals to the generosity of universities, scientific and other learned bodies and their individual members, to send books and periodicals to the Centre for distribution under expert guidance to the libraries where they will be most useful. Over a million books have already been collected, but the proportion of modern technical and scientific works is low. Thus "the books which a man keeps by him for the purposes of his profession or calling—in brief, his working tools," are exactly the books needed to replenish those destroyed libraries. And books and journals, also the transactions of associations concerned with the science of nutrition, are not the least of these needs. Donors should first send lists of books or periodicals available. Carriage will be refunded, if so desired, on all books presented.

The literature on nutrition, in every language used by scientists, was first assembled in abstract and review form in the quarterly publication, *Nutrition Abstracts and Reviews*. Beginning in October 1931, some 450 periodicals concerned with nutrition were reviewed with keen discretion and rigorous exactness. Since then, and even through the desperate early years of the war, every quarterly issue sent to the office of this JOURNAL has safely crossed the ocean to be lined up as a permanent and, except for reports from certain enemy and enemy-occupied countries, a complete record of fourteen years' progress in the science of nutrition. Just before the war the number of journals reviewed was increased to 500 and copies of *Nutrition Abstracts and Reviews* were going to nearly every laboratory in the world where research in nutrition was being done. Despite the exigencies of war, and with characteristic British tenacity, the editors carried on, and even in the dark days of the 1940 blitz they stated that "the normal number of copies is still being printed in the hope that subscribers in enemy-occupied countries will be able to complete their sets when peace is established."[2]

At that time, too, Sir John Boyd Orr[3] and his associate editors took steps to see that "if through any circumstances the difficulties of maintaining the work of the Journal in the United Kingdom were increased, the additional necessary work would be undertaken by our American colleagues and the continuity of the work of the Journal maintained." Thus the great task went on and will continue, to become when peace arrives an even greater force in promoting human welfare. And in that other great task, the replenishing of libraries as this concerns the science of nutrition, the readers of this JOURNAL undoubtedly will wish to do their part.

[1] Bull. of Hygiene. February 1945.

[2] Nutrition Abstr. & Rev. 11: 1, 1941.

[3] *Editor's Note:* The January 1945 issue of Nutrition Abstr. & Rev. announces that Sir John, Editor in Chief of the publication, has resigned his position as Director of the Rowett Research Institute, Bucksburn, Aberdeen, Scotland. The announcement is made so that overseas readers may know that the post will be vacant.

"—AMID A CONSTANT SHOWER OF ROBOTS"

The following letter received by Major Helen Burns from First Lt. Elsie K. Miller, Medical Department Dietitian, attached to a general hospital in Belgium, is the second from Lieutenant Miller to be published in this JOURNAL. The first described the establishment of the "tent hospital" to which she was attached (*see* p. 213 this JOURNAL for February). The second, written in February of this year, which we are publishing in its entirety, is a poignant reminder to all of us of the courage and devotion to duty of those on the fighting fronts. More than that, it tells, in restrained and simple fashion, yet with vivid clarity, the story of a real heroine, a dietitian under fire, who never faltered but went on with the work that had to be done. The letter follows:

I would like to tell you something of our experiences last November and December. I think that I have written you concerning our opening before Thanksgiving and the complete and beautiful holiday dinner we served that day with equipment which had just been unloaded from supply trucks. We had about three weeks to organize our mess and then we were ready for the rush we expected at Christmas. However, never did we expect what we got.

About a week before Christmas we were the unfortunate victims of a robot bomb which hit our Detachment Mess Hall at noon meal hour. The result of this was no mess hall for the detachment. However, this was remedied by feeding our patients on the wards, and our detachment in the patients' mess hall. All went well until Friday before Christmas when we were again hit. This time the sleeping quarters of our mess were hit, but it was at noon and only those who were on nights or who happened to be in the area were injured. This included a very able mess sergeant from the patients' mess who was rather seriously hurt.

The day had dawned amid much apprehension among us as to what progress the break-through was making. We were very busy with our holiday preparations all day—amid a constant shower of robots. Around 8 p.m. the head mess sergeant, the staff sergeant in the mess, the two first cooks to go on shifts, the butchers and bakers, all gathered in the mess office. We proceeded to discuss what preparations had been completed for the holiday. The trees were decorated, rolls and cakes were baked, turkeys were all dressed and fourteen field ranges were all in use roasting the birds. We carefully went over plans for the complete service for the next day. Then the butchers, bakers and some of the sergeants went to their tents. The clerk and two head sergeants remained in the office with me to go over some loose ends.

Less than five minutes later we heard the most horrible roaring of planes and bombardment. We realized that it was very close but after a moment we went back to work, picked up the phone to order a truck to deliver some rations and the operator told us that our detachment area and hospital area had been strafed. We rushed to the Dispensary and I was the first woman to arrive as the casualties began to pour in. My head baker arrived torn wide open from front to back (perforated ileum, eleven places, etc.). My fireman died within three minutes with only the O.D. and myself with him. Litters were piled everywhere. I worked along with the M.D.'s washing wounds, cutting off clothes and tagging people. By 11:30 the Dispensary had partially emptied out, and we returned to the mess office to try to figure out what was left of our department. Sergeant Michaels and myself took out our roster and checked the names: one fireman, one K.P. and two cooks had been killed; seriously wounded were one mess sergeant, one baker, two butchers, three cooks and several K.P.'s. The night was clear as day and we still had the problem of twenty-four field ranges going full blast with all the tent flaps and doors closed. The fumes and heat were unbearable; however, some ambulatory patients from the infantry came to our rescue and blacked out our kitchen with blankets and other temporary measures so that we could continue cooking our turkeys and supper for our night personnel. At last we had a makeshift staff arranged for the morning, for from the nine men who had reported for work the noon before, we now had only three left.

Several enlisted men had been removed from the mess when the T.O. was changed and these were still with us awaiting shipment. It was to these that we owe the credit of getting through the next few days. They reported without question and filled in the gaps in our three messes, as the patients' mess was not alone in its loss.

Finally around 4 a.m. Christmas morning, amid another plane barrage, I returned to my quarters to try and orient myself and get cleaned up as I had not been back to my room since 5:15 the morning before. I returned at my usual time of 5:30 and breakfast went rather smoothly although everyone felt so odd, and so many strange faces appeared to do jobs that we had never realized others than the mess personnel knew how to do. After breakfast the mess officer, mess sergeant and myself made rounds of our men who were injured, and found several of them to be on the serious list, and some already transferred to neighboring hospitals whose permanent building setups afforded more protection than our tents.

Some few changes were made in our holiday menu and then everyone pitched in to provide the best meal possible. We had had the detachment mess sergeant, who was very badly wounded about the head and neck, transferred to a neighboring hospital. At noon, the hospital called asking the mess officer and myself to come down as the patient was conscious and asking for us. We arrived just as the boy was dying. That was the third of my boys to die in twelve hours. We remained while they prepared him for burial, and returned to tell our now already stunned boys that Sergeant Cotton had also gone. I shall never forget how the boys just stopped, listened, and then each one quietly returned to his work—never a word—just a tear here and there. I recalled vividly that I had offered to help the cook put up the cold foods and count out his rolls and candy, so I simply picked up the bag for the next ward and filled it after I told them the tragic news. Between filling one bag and the next, I had had another of my boys go.

The Red Cross had taken over the decoration of our mess hall and I can say that we probably had the most beautiful tent mess hall in this section. A beautiful tree, tablecloths, place cards and all the allied decorations. We served a complete holiday meal from soup through roast turkey and candy. That night all of us went to our quarters very sad but very proud that we did not let the soldiers down who were depending upon us for some holiday spirit.

Time is the great healer, and now several weeks later we are slowly getting our wounded boys back to duty and messages from those we evacuated. We can boast of a mess personnel with over two thirds of its number wearing the Purple Heart, but we would be happier to have no Purple Hearts and our men back. I have wanted to tell you this story for several weeks, but security is most important. We have learned first hand the bitter taste and price of war, and I think it has made us a better hospital.

The letter speaks for itself. With deep sincerity and restrained emotion it reflects the fine spirit of loyalty that existed—among K.P.'s, cooks, bakers, mess sergeant, mess officer, and dietitian, alike—and the determination of those who survived to go on, despite "the bitter taste and price of war," and do a better job.

ASCORBIC ACID CONTENT OF FRUITS AND VEGETABLES USED IN AN INSTITUTION[1]

VIRGINIA SCHAUSS

University Hospitals, Iowa City, Iowa

This study was conducted to determine the effect of institutional methods of preparation and serving on the vitamin C content of fruits and vegetables.

The chemical method used in the analyses was an adaptation of that suggested by Stotz[2] which is based on the fact that the dye, 2,6 dichlorophenol-indophenol, is reduced by vitamin C and then may be extracted from an acid solution with xylene. The dye is allowed contact with the vitamin C for the short time necessary for reduction and the unreduced dye is then extracted with xylene and read in the spectrophotometer.

Large samples of the food were taken from the kitchen to the laboratory and a 50-gm. portion was weighed out and covered completely with 6 per cent metaphosphoric acid. In the presence of the acid, the food was chopped in a Waring Blendor until thoroughly macerated. In the case of pigmented foods, Lloyd's reagent was used to remove the color. After the plant cells were completely ruptured, the whole was filtered through rapid filter paper and a clear, colorless filtrate obtained. This filtrate was made up to volume with distilled water and an aliquot taken which was calculated to contain approximately .05 mg. vitamin C. The *p*H of the solution was then adjusted with a phosphate citrate buffer and the dye added. The solution was layered with xylene, shaken thoroughly and the color of the xylene read in the spectrophotometer. A "blank" tube was also run using the distilled water instead of an aliquot of the unknown. The difference of the logarithms of the transmission of the unknown and blank is directly proportional to the amount of vitamin C present.

Fruits and vegetables which were served both raw and cooked were analyzed, also frozen fruits and vegetables. The fresh vegetables were usually prepared about 24 hr. before they were to be used and refrigerated until time of cooking. Fruits and vegetables to be eaten raw were prepared 1 to 12 hr. before serving and held in the refrigerator until used. Frozen vegetables were kept frozen until time of cooking.

From 30 to 100 lb. fresh vegetables was placed in boiling water and the water returned to the boiling point as soon as possible. In the case of vegetables to be steamed, 10 to 20 lb. was placed directly in an atmosphere of steam. From 20 to 50 lb. frozen vegetables was placed in boiling water, without any preliminary thawing, and cooked as rapidly as possible. Effort was made in all cases to avoid overcooking, and the cooking period, in general, was staggered so that the food was seldom held on the steam table longer than 30 min.

Initial values for fruits and vegetables are shown in Table 1. The fruits and vegetables used in these experiments, with the exception of the local rhubarb and strawberries, were shipped from the South and West and arrived from 7 to 11 days after being harvested. The vitamin C content varied from 166 mg. per 100 gm. of parsley to 23 mg. per 100 gm. tomato. The rhubarb and strawberries, grown in Iowa, arrived within 2 to 3 days after harvesting.

All the processes of preparation resulted in a loss of vitamin C. Vegetables served raw lost from 25 to 59 per cent of their vitamin C content (Table 1); raw fruits, 22 to 36 per cent.

In general, the initial values for fresh fruits and vegetables were higher than those of the frozen, although the percentage loss during preparation, in some cases, was approximately the same (Table 2). Cooking and holding losses for all vegetables are shown in Table 2. Total losses during the complete process varied from 42 to 71 per cent.

The values found in this experiment agree in general with other work done at the State University of Iowa Hospitals. Daum, Aimone and Hollister[3] found that cooking losses varied from 6 to 44 per cent, that holding on the steam table for 60 min. resulted in a further loss of 6 to 50 per cent, and that total losses due to cooking and holding varied from 17 to 56 per cent.

Watters,[4] in a study on the effect of institutional food preparation on the vitamin C content of fruits and vegetables to be served raw found that losses in such food ranged from 10 to 42 per cent; cooking resulted in losses of 23 to 47 per cent; while holding on the steam table for 30 min. effected an additional loss of 32 to 46 per cent.

Nagel and Harris,[5] studying the effect of restaurant

[1] In partial fulfilment of the requirements for the master of science degree in the Department of Nutrition, Graduate College, State University of Iowa.

[2] Stotz, E.: J. Lab. & Clin. Med. 26: 1542, 1941.

[3] Daum, K., Aimone, M., and Hollister, S.: J. Am. Dietet. A. 19: 693, 1943.

[4] Watters, J. B.: Thesis. State University of Iowa, 1943.

[5] Nagel, A. H., and Harris, R. S.: J. Am. Dietet. A. 19: 23, 1943.

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cooking on the vitamin C content of vegetables, found losses somewhat higher. Studies on 15 vegetables showed that restaurant cooking caused a 45 per cent destruction of the vitamin and that standing on the steam table caused an additional loss of 25 per cent or a total loss of 70 per cent of the original vitamin C.

Kahn and Halliday[6] found that potatoes cooked in large quantities lost 20 to 50 per cent of their vitamin C content and Jones *et al.*,[7] working with large quantities of frozen broccoli, found that 31 per cent of the vitamin C content was lost after 8 min. cooking and an additional loss of 13 per cent resulted after holding on the steam table 30 min.

TABLE 1
Vitamin C content of foods served raw

FOOD	BEFORE PREPARATION	AFTER PREPARATION	TOTAL LOSS
	mg./100 gm.	*mg./100 gm.*	%
Cabbage	49	20	59
Cantaloupe	38	24	36
Grapefruit	44	35	22
Oranges	53	38	28
Parsley	166	68	60
Strawberries, fresh	65	47	27
Strawberries, frozen	30	19	36
Tomatoes	23	17	25

TABLE 2
Vitamin C content of cooked food

FOOD	BEFORE COOKING	AFTER COOKING	AFTER 30 MINUTES ON STEAM TABLE	TOTAL LOSS
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	%
Asparagus, fresh	37	29	22	42
Asparagus, frozen	25	17	13	42
Beans, green, fresh	21	11	6	69
Beans, Lima, frozen	20	11	6	71
Broccoli, fresh	85	54	34	60
Broccoli, frozen	44	29	24	45
Cabbage, fresh	48	25	17	64
Cauliflower, fresh	78	49	36	54
Cauliflower, frozen	46	34	26	43
Peas, frozen	24	19	16	33
Potatoes	20	16	11	47
Rhubarb	19	12	—	37
Spinach, frozen	43	20	15	65

As the figures for vitamin C content of the foods as served show (Tables 1 and 2), vegetables such as broccoli and cauliflower and fruits such as strawberries and the citrus fruits are very good sources of vitamin C even after preparation and holding.

THE DIETITIAN IN THE ROYAL CANADIAN NAVY

PAYMASTER LT. COMDR. A. ELIZABETH CROZIER, W.R.C.N.S.

Staff Dietitian, Canadian Northwest Atlantic Command, Royal Canadian Navy, Halifax, Nova Scotia

In Canada we have three women's services, each an integral part of the armed services: the Canadian Women's Army Corps, Royal Canadian Air Force (Women's Division), and the Women's Royal Canadian Naval Service.

The Women's Royal Canadian Naval Service—the last women's service to be formed—was organized in August 1942. But not until June 1943 were Wren dietitians appointed for duty with the Royal Canadian Navy. Meanwhile, however, hospital dietitians were at work under the medical branch and attached to the various Royal Canadian Naval Hospitals. They are the pioneers in dietetics in the Navy. Helen Murphy, attached to the Senior Naval Hospital at Halifax, was the first hospital dietitian appointed, in January 1942. Since that time eight others have been trained and appointed to the various naval hospitals in Canada, and one is now serving overseas.

Our Chief Dietitian in the WRCNS, Lt. Comdr. Doris Taylor, was appointed in June 1943 and attached to Naval Service Headquarters, Ottawa. Shortly after this, four other staff dietitians were appointed, three in an advisory capacity to the three commands—Pacific, Atlantic, and Naval Divisions. A fourth was appointed at this time to our training base in Cornwallis, Nova Scotia. A little later a staff dietitian was appointed to the remaining command in Newfoundland.

At a joint conference of dietitians and senior officers of the accountant branch it was decided that in addition to the staff appointments, dietitians as mess hall supervisors would be appointed in messes victualing 800 and over. At present we have eight dietitians in charge of mess halls, with others in training. These staff and mess hall dietitians are attached to the accountant branch.

In addition to the above, in our cookery schools we have three thoroughly experienced home economics graduates as instructors, one of whom, Elspeth Middleton, is in charge of cookery instruction at all schools. These schools are for the training of new entry cooks—an 8-week course—also for cooks' advancement examinations, and for refresher training.

The qualifications for these dietitians include: membership or eligibility for membership in the Canadian Dietetic Association, with at least 3 to 4 years' experience in the commercial field. They take a basic training course, along with all other Wrens, followed by a short course in supply, with particular emphasis on victualing, and finally their officers training course—all of which entails approximately $2\frac{1}{2}$ months. They are then appointed to their specific duties.

Staff dietitians in the various commands are appointed to the staff of the officer-in-charge of that command where they carry out such duties as lecturing, examination of cooking ratings for advancement, inspection of galleys, checking and advising on ships and establishments, menus, etc.

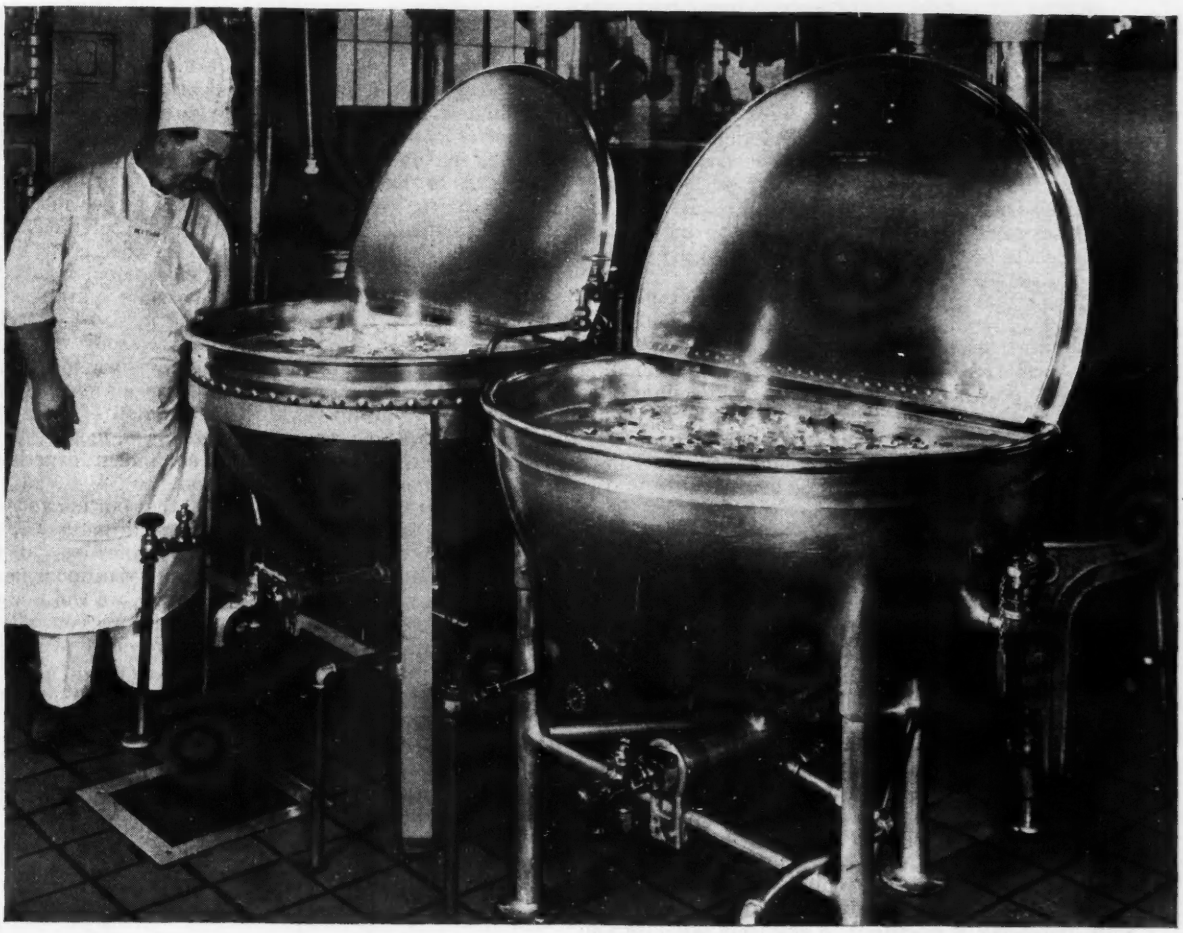
Mess hall supervisors are responsible to the accountant officer carrying out the supply duties of the establishment concerned. Their responsibilities include the following: determining the dietetic value of the menus and intelligent use of authorized rations; efficient managing of the galley, planning of galley routine, arranging of cooks' watches, etc.; organizing messing spaces and supervising mess men and dishwashing crews; controlling methods of cooking and preparing food; supervising the serving of meals; supervising the distribution of provisions issued to the galley so that all may be correct in quantity and used for the purpose for which they are supplied, and to ensure that no foodstuffs are accepted in, or issued from the galley unless they are in a good and wholesome condition; cooperating with the Medical Officer for Hygiene with regard to sanitary measures throughout the mess halls and galleys; preventing waste.

The method of feeding in the Royal Canadian Navy is by means of scales of rations: one for ships and naval hospitals, the other for shore establishments. While both are most adequate and provide good variety as well, the former is more generous.

For ships at sea certain additional rations are permitted.

[6] Kahn, R. M., and Halliday, E.: J. Am. Dietet. A. 20: 220, 1944.

[7] Jones, J. B., Wood, M. A., Phillips, M. G., Fenton, F., and Harris, K.: J. Am. Dietet. A. 20: 369, 1944.



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The emergency life raft ration is the result of many months of study and laboratory investigations. The ration kit weighs $17\frac{1}{2}$ lb. and is protected by a salt-water-resisting paint. It contains water rations and concentrated food, including chocolate tablets, concentrated biscuits, chocolate bars and chewing gum.

At the outbreak of war, our Navy was a very small one of 11 ships and less than 1800 men. Large-scale feeding was unknown. With the rapid expansion which ensued and with large training and other bases established ashore, in addition to the building of many ships, small and large, it was natural that rapid recruiting and training of cooks became necessary. The course of training, of necessity, was limited to a few weeks. Personnel were hurriedly acquired for the planning and equipping of galleys. It is indeed a credit to our Navy that, almost miraculously, shore establishment galleys, feeding many thousands of men, were quickly and efficiently set up.

Since the Navy is essentially a seafaring organization, routines ashore follow closely those used afloat. In a ship, men eat, sleep, and relax on their mess decks for which the executive branch is responsible, while the accountant branch is responsible for the galleys and cooks. This system has been carried over into the shore mess halls but, more recently, and particularly where dietitians are in charge, the mess decks as well as the galley are the responsibility of the mess hall supervisor. Mess men in shore galleys are supplied from the seaman and stoker branches and serve in this capacity for a limited time. They perform duties of serving at meal hours, dishwashing, etc. In the near future it is hoped that sufficient Wren mess women will be available to take over these duties.

Our Navy has also established its own bakeries, manned by cook personnel, in all the important bases. A cook's training includes special emphasis on the making of high quality bread, the result of methods developed by our medical research unit as well as our cooks. Whole wheat breads are becoming more popular in the Royal Canadian Navy and Canada-approved flour is used exclusively. Additional calcium is now added in the form of bone meal. The keeping quality is a very important factor for sea-going ships. Under proper conditions of packing, storage, etc., this bread will keep for 14 days at sea. It has been found that wrapping the bread offers no added advantage. When it is necessary to bake bread at sea, one of the cooks is usually detailed to this duty at night when the ovens are free. Dough troughs are also provided.

A new type of sea biscuit, soon to replace the old type pilot biscuit, has high nutritional value and is most palatable, resembling in appearance a graham cracker. It is not too sweet and may therefore be used with soup, jam, cheese, etc.

We realize that the dietitian's work has just begun and also that our time of service will be limited. Therefore our immediate aim is better preparation, cookery, and service of food, and intelligent and full use of the ration to provide maximum nutrition. Also we hope to raise the standards of the cook branch as well as their morale. It is thought that dietitians have already helped in this by pointing out and stressing the importance of their work. There is no doubt that on shipboard the cook is one of the most important men in the whole ship's company.

The duties of mess hall supervisors are quite specific, having to do with large-scale feeding in shore establishments. Those of the staff dietitians are somewhat more varied. In addition to their duties previously mentioned, their advice has been sought in miscellaneous matters, such as menus for a group working for a period of time in a remote spot with no means of refrigeration, food problems on board ships, galley layouts and equipment, experimentation with food products, and so on.

As dietitians in the service, we feel that our horizons are broadening—in spite of Nelsonian traditions. Of our responsibility to the Navy and our profession, we are keenly aware. The frustrations and disappointments which may be associated with our duties, we will not discuss. The greatest satisfaction, I am sure you will all agree, is expressed in a conversation, recently overheard, between a rating and a dietitian at a base, in which he said, "Ma'am, on behalf of all the boys, I want to thank you for the improvement in our food and in our galley." Appreciation such as this, makes the dietitian's task worth-while.

QUALITY FOOD PREPARATION AND SERVICE IN A LARGE ARMY HOSPITAL

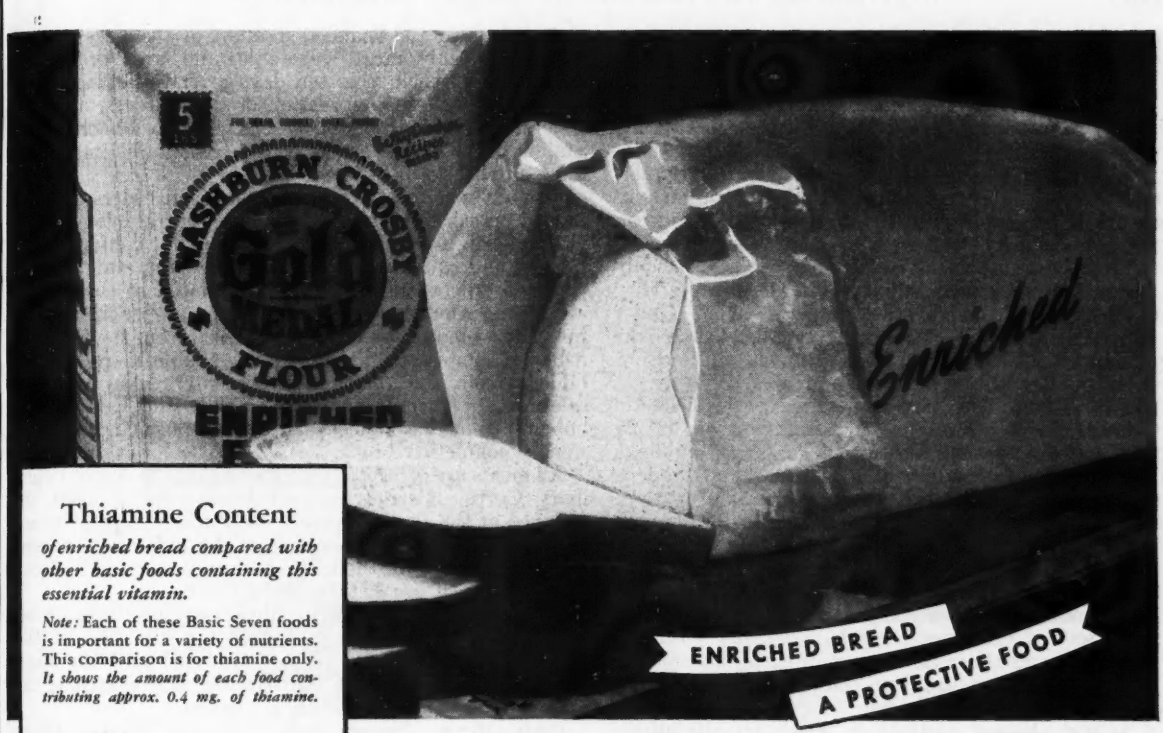
CAPT. NELL WICKLIFFE, M.D.D., A.U.S.

Brooke General Hospital, Fort Sam Houston, Texas

Because of the national emergency, our dietetic department has been subject to constant personnel changes and shortages and to an increasing number of patients. Well-trained dietitians, cooks, and mess attendants have been especially difficult to secure. In order to obtain and maintain quality food service under conditions like these, a plan of instruction of all dietitians, cooks, and mess attendants has been necessary. Our primary objective has been to acquaint these employees with our standards and with the steps we expect them to follow in order to ensure quality products with routine efficiency. This instruction includes proper ordering, preparation, service, and conservation of food.

Job Instruction and Supervisor-Employee Relationship. To obtain the desired results from such instruction, the cooperation of the employee is essential. Of invaluable aid to the dietitian is a knowledge of the technique of handling employees which will enable her to use the talents and abilities of each to the best advantage; and ensure his cooperation. We observe Job Relation Training methods in developing and maintaining agreeable supervisor-employee relationships and in applying the basic factors essential in maintaining any harmonious human relationship, namely: courtesy, sympathetic understanding, consideration, and helpfulness. All of this is not incompatible with a businesslike attitude on the part of all members of the organization.

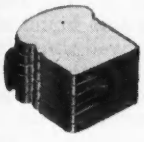
The methods advocated by the War Manpower Commission in Job Instruction Training have been incorporated in the instruction and are based on the elementary principles of educational psychology. These methods embody the five Army precepts of instruction: explanation,



Thiamine Content

of enriched bread compared with other basic foods containing this essential vitamin.

Note: Each of these Basic Seven foods is important for a variety of nutrients. This comparison is for thiamine only. *It shows the amount of each food contributing approx. 0.4 mg. of thiamine.*



6 1-oz. Slices Enriched White Bread

8½ oz. Lean Beef (calculated after cooking)

4 Medium-sized Eggs

4 Cups Pasteurized Milk

2½ cups Canned Baked Beans

2 cups Orange Juice

WHITE BREAD *high in Thiamine?*

Yes, when made with enriched flour... such as Gold Medal "Kitchen-tested" Enriched Flour.

Through enrichment, the white bread eaten every day becomes a valuable protective food—helping to meet daily requirements, not only in food-energy, but in essential B vitamins and iron.

Enriched white bread is high in thiamine (vitamin B_1), niacin and riboflavin (two other B vitamins), and iron.

Inclusion of milk (policy of most bakers) adds further to vitamin, mineral and protein values in bread. Substantial amounts of protective nutrients are included in the diet, when six slices of enriched white bread are eaten daily (average amount for a normally active adult).

This table, left, shows the thiamine content of enriched bread as compared with other basic foods.

Gold Medal Flour is enriched according to the latest government standards. This low cost, everyday baking ingredient, produced by General Mills, is helping to improve the diets of millions of American people.

General Mills, Inc., Minneapolis, Minn.

All General Mills family flours are enriched to the latest government standards. Including Drifted Snow Home-Perfected Flour (West) and Red Band Flour (South). Bisquick contains enriched flour. All brands listed above are registered trade marks of General Mills, Inc.

demonstration, application, examination, and discussion. This course has been given to all key employees.

The dietitian, of course, must know so well the process she is to describe that she can explain and demonstrate each step. Job breakdowns (which indicate the essential steps, point out difficulties and pitfalls to avoid, and stress key points and knacks) should be made of frequently performed jobs. The cooperation and respect of an employee are easily gained when the supervising dietitian can instruct effectively. And from this same effective instruction, the supervising dietitian (and especially the inexperienced) gains confidence in her own ability to get the job done in a highly satisfactory manner. Under the supervision of staff dietitians, student dietitians participate in all activities which help to maintain and improve the quality of food and food service.

Physical Setup. The physical setup of the Dietetic Department, Brooke General Hospital, consists of 25 separate patients' messes in various types of buildings located within a two-mile area. The new and modern main hospital building is the center of administration. The old hospital, constructed in 1908, is still in use, having been enlarged from time to time. Other buildings have been added as the needs arose. For instance, the permanent detachment barracks which formerly housed the enlisted personnel have been converted into a hospital annex; and several company barracks originally built for line troops have also been taken over for hospital purposes, two having been remodeled into complete hospital units.

Several units, or company barracks, have been designated as convalescent sections in which no alterations were necessary, since all patients quartered there are ambulatory and require only the regular diet cafeteria service. The same administrative procedures are followed in all messes. Because of the limited number of dietitians available, they are assigned to messes and wards where their services are most needed. With such a scattered and diversified arrangement, the administration of the Dietetic Department of necessity becomes very complex.

Originally, two patients' messes were operated under a centralized system of administration. Supervision of these messes was relatively simple, although they were separated by a distance of two miles. The centralized system resulted in better supervision, a standard food product at both messes, and economy of personnel, money, and materials, and has been expanded to include messes now operated.

Dietitians' Central Office. The dietitians' central office is the hub of activity of the department. A uniform master menu, a central storeroom for purchasing, receiving, and inspection of staples and perishables, a central butcher shop, and a central bakery contribute to efficient control.

The weekly master menu is written two weeks in advance, mimeographed, and sent to all dietitians, mess sergeants, and to the storeroom, butcher shop, and bakery. Much forethought is necessary in the preparation of this menu since all messes, food procurement, and production units must be considered; but it has been a chief factor in the conservative use of dietitians in the individual messes and in the maintenance of quality food products. Relieved of this time-consuming responsibility, each dietitian has more opportunity to follow through her instructions concerning proper preparation and service of food and general administration of the mess.

Procurement of Food Supplies. Quality food preparation and service originate with the proper estimation and placement of orders for food supplies, which, in turn, must be economically carried out if the allotted income is to be adequate. It is the responsibility of each dietitian (or the mess sergeant in messes where no dietitian is assigned) to keep the financial standing of the mess correct. Advance weekly meat, vegetable, and fruit orders are submitted by each mess ten days prior to delivery. To aid in the uniform preparation of these orders, a list of general principles to be followed is given to all concerned. Standardized recipes are used as a basis for estimation of food supplies to be ordered.

The advance meat, vegetable, and fruit orders are submitted on schedule to the dietitians' central office, where the dietitian in charge checks all orders for conformity to menus and quantities according to the standardized recipes. All orders are then consolidated in the central storeroom prior to placement with the proper firm. The majority of food supplies are purchased from the Quartermaster Commissary. Foods not available there may be bought from the Army market center, local markets, salesmen, or an approved vendor. Perishable items are bought from local inspected wholesale markets upon weekly competitive bids.

All meats are inspected by a member of the Army Veterinary Corps. Carcass and wholesale cuts of meat are received at the central butcher shop, where retail cuts are prepared, to meet the demands of the individual messes. The retail orders for the individual messes, submitted one day in advance, are distributed by truck.

A central bakery supplying the pastry products for all hospital messes is operated under the direction of the dietitian. Standardized recipes are used and the head baker reports daily to the dietitian in charge regarding the following day's preparations and orders.

Daily Menus, Recipes, and Instruction Sheets. Daily mimeographed menus for all regular, light, soft, liquid, and special diets in the several messes are received three days in advance. A daily instruction sheet for the regular diet menu is prepared in the dietitians' central office and accompanies the corresponding day's menu for the express purpose of obtaining uniform products of high quality in all messes. This instruction sheet gives specific information as to recipes to be used, amounts to be ordered, and portion allowance and service of the finished product. A wide margin on the left-hand side is used by the dietitian to record amounts ordered, number of orders to be prepared, use of leftovers and other necessary information for the individual mess. This sheet is posted in the kitchen for the guidance of the personnel. Special notes and reminders are added when necessary.

Further to ensure uniform quality food preparation, standardized recipes are provided and a master standardized recipe file is maintained in the dietitians' office which contains duplicates of all recipes used in the various messes for reference use and to replace any mislaid in the individual messes. The recipes have been compiled from all available sources and many have been formulated in our department. Each mess has a recipe file written in quantities most appropriate for the mess in question.

Recipes are typed on 5 x 8-in. cards with space for listing quantities to meet changes in census. Additional entries may be made to suit the individual needs of a mess. Preparation procedures typed on the reverse follow the step procedure and are as simple and brief as possible. While this preparation procedure is not written actually as a job breakdown, any special precautions, hazards, "tricks and knacks" are noted. The source of each recipe is recorded on the reverse of the card.

Recipes are standardized and rechecked daily by student and apprentice dietitians as part of a required assignment. All new recipes are tested before appearing on the menu in relatively small quantity at first, then in larger units easily consumed at the mess used as a laboratory.

Daily Administrative Routine. Each dietitian in a mess has a detailed schedule of duties which is essential

Aminoids

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For ORAL ADMINISTRATION

Aminoids* is a mixture of amino acids and peptides, derived from Beef, Wheat, Milk and Yeast, with carbohydrates added. In the manufacturing process these protein foods are broken down by enzymes simulating the normal action of the human digestive tract.

Aminoids supplements the protein intake of the diet . . . decreases the work required of the digestive organs . . . provides dietary nitrogen available for rapid assimilation . . . supplies the amino acids present in Beef, Wheat, Milk and Yeast.

Aminoids is indicated in pregnancy and lactation—pre and post-operative care—burns—ulcers—anemia—nutritional edema—nephrosis.

Aminoids is further indicated whenever the protein intake or utilization is insufficient as suggested by loss of weight—dietary history—albuminuria—impaired digestion, as in: Achlorhydria or hypochlorhydria—achylia gastrica—achylia pancreatica.

Aminoids may be taken in hot or cold liquids—water, milk, fruit juices, etc.

One tablespoonful of Aminoids T. I. D. supplies nitrogen equivalent to approximately 12 gm. of protein, as hydrolysate.

Dosage may be adjusted to meet the patient's requirements. Supplied in granular form in bottles containing six ounces.

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THE ARLINGTON CHEMICAL COMPANY

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to good supervision, especially where frequent shifts of dietitians are necessary. Special responsibilities and precautions are noted in a summary attached to the schedule. Equipped with this schedule and the Daily Instruction Sheet and standardized recipes, the dietitian, or the mess sergeant in messes where dietitians are not assigned, is responsible for the proper administration of the mess.

Each mess submits an order book daily to the central storeroom where all food orders for the following day are recorded. A definite time is assigned as an instruction or conference period with employees and the preparation of this order book is completed as the dietitian instructs the head cooks. It is the policy at Brooke General Hospital for cooks to work on eight-hour shifts. The head cook at each mess is instructed in the preparation for the following three meals for which his shift will be responsible; that is, supper of the current day, breakfast and dinner of the following day. This division of meals seems to be most convenient with the eight-hour shifts. By this arrangement the cooks are able to proceed with items which require advance preparation for the next day. In the instruction period, the cook gets a comprehensive idea of what is expected of him, brief and to the point, so that he can remember it easily.

The dietitian gives verbal instructions to each head cook, using as a guide the instruction sheet, standardized recipes, and the experience of each person. During this instruction period the amounts to be used and steps in the preparation in relation to the time of service, too, are stressed. Since most of our messes serve both ward and cafeteria patients, well-timed preparation of food is essential if palatability and nutritive value of the food are to be conserved. For example, food for the wards must be ready for service about one hour before the cafeteria food. It is of the utmost importance, of course, that the dietitian be thoroughly familiar with the recipes, instruction sheets, quantity required and procedure before she attempts the actual instruction of the cooks.

Although cooks are instructed verbally and are furnished written procedures, the dietitian makes frequent inspection trips through the kitchen, noting the procedures, progress, and time of preparation for specific items, and sampling all food items before they are served.

Food Service. Good food must be properly served if the full objective of quality food production is to be attained. Proper service of all regular food for cafeterias is stressed during the instruction period. Again, frequent rounds through the kitchen and past the serving counters are necessary to obtain the desired results. Mess and ward attendants responsible for handling and serving foods are given short periods of instruction, and this instruction is reviewed as often as necessary due to type of personnel and the rapid turnover. It covers personal hygiene, sanitation of food, and proper methods to be observed in serving food. For example, one period of instruction on the proper preparation and care of lettuce to be used as an underliner for salads, with the aid of a job breakdown, yields convincing results. The supervising dietitian oversees the actual service to cafeteria patients, while ward dietitians do the same for ward tray patients. Check is made of the size of serving, method of service, sufficiency of food, etc.

A card emphasizing points to be observed in supervising service of the food according to type of mess, has been found helpful. Food likes and dislikes of cafeteria patients are also recorded. A prepared form for use in all messes has been devised on which the supervising dietitian records the number served, number of orders of each food item left over, and also checks for popularity. This form is used as a guide in menu-making, in the use of leftovers, and in placing future orders.

Food Conservation. Conservation of food is effected in all possible ways, from the first to the final step in preparation and service. These points are considered under menu planning: food likes and dislikes (the popularity of all regular-diet food served to enlisted mess hall patients is observed, listed, and recorded at all messes); seasonability of foods; and foods common to the locality.

In ordering food, waste is reduced by the following procedures: standardized recipes are followed; the daily census is altered during the day by checking on overnight and week-end passes, transfers within the hospital units, and by knowledge of local events which might keep patients away at mealtime; likes and dislikes in each mess are considered by checking the popularity card, since they vary from one mess to another; orders are calculated by number of servings per unit of food; and daily ordering enables a close check to be made on supplies used and needed.

Standard serving equipment and the size of the servings are carefully checked. Scientific waste studies are made from time to time to keep waste at a minimum. Observation of plate leftovers is also used as a means of checking waste. Ward food waste is kept at a minimum by having the dietitian check carefully all food going to the wards. Usable leftovers are returned to the mess. Dietitians instruct all employees in the use and proper care of leftovers.

In summary, the following points are considered in our department for maintenance of quality food preparation and service:

Job instruction and harmonious supervisor-employee relationship are basic factors to be observed in any organization.

The physical setup will determine the dietetic administrative procedures.

A centralized system has been found most efficient with the diversified arrangement at Brooke General Hospital.

A dietitians' central office which correlates the work of all food procurement and production units has been most effective.

Efficient procurement and inspection of food supplies play an important role in quality food service.

Standardized recipes and a daily instruction sheet giving specific instructions for daily menus have been invaluable aids in obtaining and maintaining quality products.

Proper administration of mess depends on a detailed schedule of duties, an instruction or conference period with cooks, and a follow-up by supervision throughout the day.

Supervision of food service in wards and cafeterias is essential if the full objective of quality food production is to be obtained.

Conservation of food is stressed as quality is decreased according to money value wasted.

SUPPLY OF THE ARMY[1]

CAPT. EDNA L. COX, WAC, A.U.S.[2]

Assistant to the Chief, Central Subsistence Branch, Procurement Division, Chicago Quartermaster Depot

The men of the Quartermaster Corps have received more than 750 awards for heroism and gallantry, as well as over 400 Purple Hearts, for the supply of the Army has

[1] References: The Quartermaster Corps (In the Year 1917) in the World War; Legislative History of the General Staff of the Army of the United States from 1775 to 1901; The Quartermaster 1775–1925; Chicago Quartermaster Depot Historical Studies, Public Relations Branch; Army Regulations No. 30-5, War Department, December 8, 1942.

[2] Captain Cox received her B.S. degree from the State College

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Carnation Milk is now fortified with vitamin D_3 (irradiated 7-dehydrocholesterol), which is identified with the form predominant in cod-liver oil. Its presence in Carnation Milk at the level indicated is regularly verified by bio-assays.

The announcement of this important change is timed to coincide with the completion of arrangements that make 400-unit Carnation Milk simultaneously available—within the limits of the current war-shortage—in all parts of the United States. *Carnation Company, Milwaukee 2, Wisconsin.*

Carnation Milk

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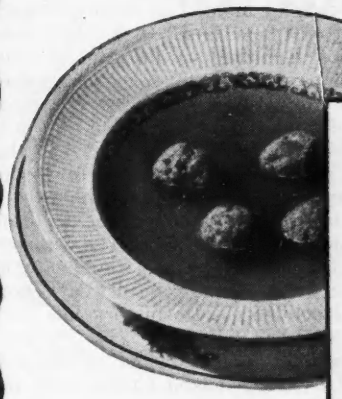
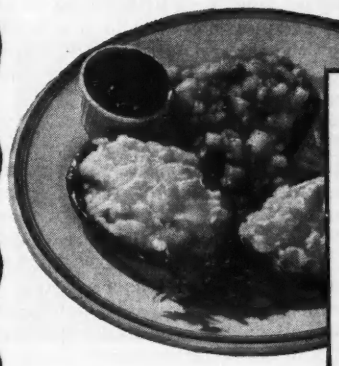
For Tasty Meat Dishes— Swift's Table-Ready Meats

TWO FAVORITES



BRAUNSCHWEIGER DUMPLINGS IN CHICKEN SOUP . . . Combine 1 pound liver sausage, 2 eggs, 2 cups cracker meal. Form in small balls and poach in chicken broth. Use 3 or 4 of these dumplings in each serving of soup.



BOLOGNA CUPS WITH SCRAMBLED EGGS . . . Don't remove strip of casing from rim of bologna slices. Pan brown slices slowly. The slices will cup up. Serve at once filled with creamy scrambled eggs. Allow 2 per serving.

● Despite the meat scarcity, you can still serve nourishing meat meals—by making fuller use of *Swift's Premium Table-Ready Meats*. Two timely menu suggestions are shown. They're appetizing, nourishing. Yet they can be easily and quickly prepared—and *at little cost*. Make *sure* of top quality—be *sure* to order by name—*Swift's Premium Table-Ready Meats*.

SWIFT'S PREMIUM *Table-Ready* MEATS

never been an easy service. Its difficulties and dangers, for instance, were starkly apparent to those "Fighting Quartermasters" who landed in France on D-day. Until the present conflict, the Quartermaster Corps, as a supply unit, was considered a noncombatant service, but from the muck and ruin of Bataan and Corregidor came the new term: The Fighting Quartermasters. The Quartermasters not only kept the beleaguered forces supplied from the pitifully inadequate stores by displaying unequaled ingenuity, but they also fought side by side with the Infantry and Artillery in that hopeless delaying action.

There can be no invasion or fighting front until the Quartermaster has the supplies to back up the line. When our forces landed on the mainland of Italy, Quartermaster units moved ashore with the assault troops, and set up supply operations under enemy artillery and aerial fire.

Fighting Quartermasters landed supplies from lighters on the beaches of Guadalcanal under incessant aerial attack; they carried supplies on their backs over the almost impassable Owen-Stanley mountains of New Guinea. Two thousand miles from their base, they improvised storage and refrigeration facilities, set up and operated laundries and repair shops with whatever materials they had at hand. Under enemy fire, one bakery platoon operated nine ovens and produced enough bread to supply 20 lb. for each 100 men. It has been recognized in this war that fresh bread as a morale-building factor for troops in the combat zone is second only to mail from home.

These men have not failed to carry on the fine tradition of one of the oldest branches of the Army. The Quartermaster Corps was created and established by Act of the Continental Congress on June 16, 1775, a full year before the Declaration of Independence. Its history has been one of success.

Women's Army Corps officers and enlisted women now wear the insignia of the Quartermaster Corps when detailed to duty with that corps. Their assignments at Army stations are in Quartermaster Corps warehouses and offices, sales stores, bakeries, and mess halls. The WAC detachment, Camp Lee, Virginia, has been in practically permanent possession of the station complement award for the best mess. They have held this honor under stiff competition for 18 months.

Wacs also serve as sales officers, a very important position, since the sales officer at a station is responsible for subsistence for all troops, and the estimates, requisitions, storage, local procurement, and issue of food are his duties. In the Chicago area of distribution two of these positions are filled by WAC officers, and they are among the best in the group. We like to think their performance is indicative of the Women's Army Corps as a whole.

To digress from this recent incident in Quartermaster history, and compare present-day Army supply problems with the early beginnings of the Quartermaster Corps, is both informative and somewhat amusing.

The Quartermaster duties of the American Revolutionary War period included to some extent the supply of nearly all articles, stores, and services required by the Army. Food, clothing, tentage, shelter, camp and garrison equipment, forage, animals, and means of transportation were the principal items directly chargeable to the department, but it also assisted in the supply of arms and ammunition, as well as medical supplies. Records seem to show that some of the articles most difficult to procure were salt, forage, lead, gunpowder, and sulfur. Salt, the main source of which had been Spain and her possessions, was necessary as the only means of meat preservation then in use.

In the early stages of the Revolution, the most primitive and helter-skelter methods were among those used in raising supplies for the Army. Every method, from house-to-house canvass to formal contracting, was brought into play. The Continental Congress, the only control agency to direct the course of events, was powerless to raise funds or to make levies, since it could only recommend and request action and contribution on the part of the different colonies, and as early as the close of 1777 both currency and credit had depreciated to such an extent that Congress was practically bankrupt.

The first American uniform consisted of whatever could be had, from civilian clothing to the "regular British uniform," the latter being adapted by no greater change than a sprig of hemlock worn in the hat. Prior to 1778, uniforms were mostly brown, thereafter blue was the predominant color. There was little uniformity even in the dress of a single regiment. After 1779, when the French began openly to assist us, clothing conditions improved, as did also the situation respecting arms and ammunition.

The first ration allowed by the Continental Congress "unto each soldier" consisted of the following:

Per man per day:

1. 1 lb. fresh beef, or ¾ lb. pork, or 1 lb. salt fish. (The first winter salted beef was used, fresh beef to continue twice a week.)
2. 1 lb. bread or flour.
3. 1 pt. milk. (A few months later amended: or at the rate of ½ of a dollar.)
4. 1 qt. spruce beer or cider per man per day; or 9 gal. molasses per company of 100 men per week.

Per week, in addition:

1. 3 pt. peas or beans, or vegetables equivalent, at 5 shillings per bushel for peas or beans. (Turnips, potatoes and onions are mentioned as substitutes.)
2. ½ pt. rice or 1 pt. Indian meal.
3. 3 lb. candles to 100 men for guards.
4. 24 lb. soft or 8 lb. hard soap per 100 men.

During the first winter the meat allowance was increased in lieu of milk, which could not be procured then. Six ounces of butter or 9 oz. lard per week was also added. The ration was figured at the rate of 31/360 of a dollar, later increased to 10/90 of a dollar.

Rations were allowed at the rate indicated, 15 to a major general, 6 to a colonel and 3 to a captain.

Salt continued to be a critical item in spite of attempts to promote its processing by both the Army and the states, as is attested by the following: Orders, General Hq. before York, Oct. 2, 1781: "Salt provision is not to be issued without a general order—but in cases of necessity." One of the early salvage orders further indicates the scarcity of salt: "Resolved, That the Commissary General of Issues be directed to preserve the pork and beef barrels, and as much of the salt therein as can be collected."

The first "Victory Garden" was ordered by Congress in 1776 as follows: "That a garden be kept on the grounds of hospitals, on Mount Independence, to supply vegetables for the Army."

Coffee and sugar are not mentioned until the Act of July 5, 1838, Sec. 17: "That the allowance of sugar and coffee to the noncommissioned officers, musicians, and privates, in lieu of the spirit or whiskey component part of the Army ration, now directed by regulation, shall be fixed at six pounds of coffee and twelve pounds of sugar to every hundred rations, to be issued weekly when it can be done with convenience to the public service, and when not so issued to be paid for in money."

Supply problems of this early period and of former wars were certainly perplexing, but they pale into insignificance beside those of the present conflict. In World War I,

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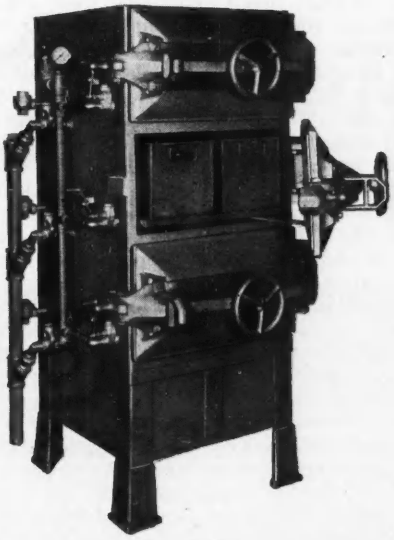
of Washington, and pursued graduate studies at Columbia University. She was staff dietitian at King County Hospital, Seattle, previous to being commissioned in the first class of officers of what is now the Women's Army Corps.



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Steam-Chef is one answer to your help problem. Every control is automatically regulated—temperature, moisture, speed of cooking—you have a simple, convenient unit that calls for little attention. You have no pots and pans to watch. Just put in the raw food and remove it in a short time, correctly cooked, with vitamins retained, and practically no shrinkage. Anybody can operate a Steam-Chef, and turn out more food, better cooked, at lower fuel cost, than with any other equipment.

Your post-war steamer is here NOW—a Steam-Chef!

Steamers of any required size—operated by direct steam, gas or electricity. Steam-Chef is now available for all users. Consult your jobber or write us for full information.

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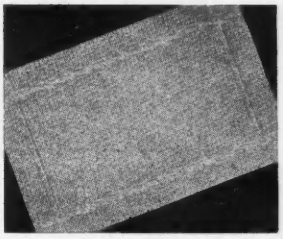

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we mobilized only slightly more than 4,000,000 men, of whom no more than half saw overseas service. For the most part, that war was waged on a single front, with all the troops requiring virtually the same type of supply, shipped over a single ocean, and landed at established ports well back from the combat zone.

In World War II, our troops are at stations 10,000 miles apart, serving in every range of climate from the tropics to the Arctic, and we ship supplies over the waters of the Seven Seas. The supreme necessity for speed in this war has promoted the development of comprehensive aerial supply techniques. Aerial supply has previously been considered an extremely limited type of operation, and it still has its limitations, but allied offensives in several theaters have demonstrated that supply lines are not so earthbound or seabound as past supply theory and practice would indicate. This has been especially true in the China-Burma-India theater. Here Wingate's expedition and Merrill's Marauders proved that large units could operate successfully, although completely separated from their bases, when supplied by air.

As a main supply service for our Army of some 7,500,000 men, the mission of the Quartermaster Corps is to procure and distribute at home and abroad more than 70,000 individual items necessary to keep the fighting man in action.

The Quartermaster Corps is one of the seven technical services under the Army Service Forces—the other six being Medical, Engineers, Ordnance, Signal, Chemical Warfare, and the newest corps—Transportation. In general, the Quartermaster furnishes virtually everything used in common by two or more services.

The amount of supplies needed in each category is almost beyond comprehension. A soldier eats about five pounds of food each day, which means that every 24 hours the Quartermaster Corps must provide a total of more than 38,000,000 lbs. of foodstuffs.

When the soldier goes overseas, the Quartermaster Corps must maintain a 247 days' food supply on hand for him. Supplies and equipment varying from 5 to 12 tons are shipped overseas with each soldier, and from 1 to 2 tons must reach him every month to keep him in fighting trim.

Supply lines have been likened to pipe lines reaching from factories to the battle zones. One hundred tons of equipment and supplies must be moving continuously in these "pipes" for each squad of 12 men. To ensure the constant flow of supplies, 29 tons must be distributed in various military depots at home, 6 are in the ports of embarkation, 18 in transit, while 47 tons are spread out in base and regimental supply points throughout the theater of war. For example: to keep just one soldier in shoes requires that 12 pairs be kept moving somewhere along the supply "pipes" at all times.

The key military installation of this vast supply picture is the Quartermaster Depot. The Chicago Quartermaster Depot, under the command of Brig. Gen. J. E. Barzynski, is one of the most important of 22 Quartermaster or Army Service Forces depots having a Quartermaster branch, located in the United States. Since July 1941, when the Army centralized its procurement system, the Chicago depot has functioned as a main procurement agency for the bulk of the nonperishable subsistence items bought, not only for Army consumption, but also for the Navy, Coast Guard, Marine Corps, and other government agencies. The items include practically all the canned vegetables, dehydrated vegetables and soups, canned meats, flour, many cereals, evaporated milk, and combat rations. Certain items of clothing and equipment, and of general supplies, are also centrally procured by the depot for the entire Army. Before the present war the Chicago depot purchases were approximately $6,000,000 per year—a sum about equivalent to the daily average outlay at present. The Chicago Quartermaster Depot is also a storage and distribution depot for approximately 45 posts, camps, and stations in this area.

One of the supply lessons gained from bitter experience in World War I was that ports of embarkation should receive an orderly and controlled flow of supplies. At one time in that war the Port of New York had freight cars on practically every siding between New York and Buffalo. The "filler" depot was established and assigned the specific responsibility of proper supply for the ports of embarkation. While inland from the seacoast, filler depots are so located as to be readily accessible to the port, both by rail and highway. The Chicago depot functions in this manner, as well as a reserve depot, with the mission of storing supplies set aside for special purposes.

The Chicago depot has direct connection with all railroad lines entering and leaving the city, and owns over a thousand miles of track divided among four switch tracks inside of permanent storage buildings and has leased other trackage to expedite the shipment of stock stored elsewhere on the reservation. A total of 90 freight cars can be accommodated on the tracks along the loading platforms under roof. These facilities, as well as proper materials handling equipment, streamlined methods of operation, use of an electrical accounting machine unit, and an efficient organization, enable the depot to handle 40,000 tons of supplies in a typical month, representing some 60,000 requisition line items. In addition, thousands of tons are shipped each week directly from points of production to destination, which means the paper work involved in the transaction is performed at the depot. WAC officers are assigned in 17 of the 22 ASF and Quartermaster depots, doing many jobs that were formerly considered men's work.

An unusual feature of the Chicago depot is the Subsistence Research and Development Laboratory directed by Col. Rohland A. Isker, which initiates, directs, and controls research involving practically all food products used by the Army, as well as the Navy and Marine Corps. The laboratory functions as a coordinating agency between the Army, other federal agencies, educational institutions and the food industries to ensure the best food standards for the soldier.

The Quartermaster Corps, as the great supply service of the Army, has a difficult and complicated task. Its officers and men perform the most essential and least glamorous duties facing the military organization. Theirs is a job that comes ahead of all others. They are doing it well.

APPOINTMENTS AND PROMOTIONS, ARMY MEDICAL DEPARTMENT DIETITIANS

The following Medical Department Dietitians were appointed in the Army of the United States during April 1945:

Bradford, Margie Ann: Michigan State Col.; Cook County Hosp.
Cassity, Agnes Beverly: Univ. of Alabama; Fitzsimons G. H. and C. H., Camp Carson, Colo.
Crowe, Eleanor: Univ. of Maryland.
Dykes, Juanita Wilkins: Univ. of Tennessee; R. H., Ft. Bragg, N. C.
Fay, Margaret Ann: Carnegie Inst. of Tech.; Fitzsimons G. H. and McCloskey G. H., Temple, Tex.
Forbes, Eunid: Iowa State Col.
Gilmor, Adelaide Ann: Drexel Inst. of Tech.; Lawson G. H. and O'Reilly G. H., Springfield, Mo.
Haxel, Eileen Elizabeth: Iowa State Col.; Univ. of Oklahoma Hosp.
Holmberg, Rita Elizabeth: Clarke Col.; Johns Hopkins Hosp.
Kacer, Elsie Jean: West Virginia Univ.
Kennedy, Annie Fearn: Univ. of Oklahoma; Fitzsimons G. H. and McCloskey G. H.

Contribution TO VICTORY

NONFAT DRY MILK SOLIDS

Year	Production in Pounds	Lend-Lease Purchases (2)	% of Total
1939	267,860,000		
1941	366,455,000	38,776,820	11%
1943	509,620,000	234,510,521	46%
1944	(1) 583,885,000	295,856,216	51% } 62%
1944	(3) (Military & War Services)	58,000,000	11% }

(1) Government estimate (2) Lend-Lease only including Red Cross
(3) W.F.A. 1944 Allocation

When total Victory is ours and this vital bread ingredient is again available, use at least 6% for nourishing, tasty, preferred bread.

● Bakers, milk producers and civilian consumers can take pride in the joint contribution they have made to Victory in Europe, and will continue to make toward Victory in Japan.

Responding to Government request, production of vital nonfat dry milk solids more than *doubled* in five war years. Government purchases of this important food multiplied nearly *ten times* in the period of our war participation. Bakers and other users restrained their normal civilian use of this highly nutritious food in bread so that our troops, our allies, and the liberated peoples might benefit from its consumption.

These interesting figures tell the story:

AMERICAN DRY MILK INSTITUTE, Inc., 221 N. La Salle St., Chicago

Kellogg's Present YOUR BREAKFAST IN A BOWL

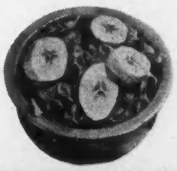
Let The Appetite Decide YOUR CHOICE OF 8 GREAT CEREALS

One ounce of any of Kellogg's 8 cereals averages 105 calories; made of whole-grain or restored to whole-grain levels in thiamin, niacin and iron. Let the appetite decide your choice: Kellogg's Corn Flakes, Rice Krispies, Pep, All-Bran, Kellogg's Raisin 40% Bran Flakes and 40% Bran Flakes, Kellogg's Shredded Wheat and Krumbles.

Here are typical Kellogg values!

KELLOGG'S PEP — shown with strawberries, is a delicious whole-wheat-flake cereal — enriched with additional vitamin B1 and vitamin D. One serving provides more sunshine vitamin D than a teaspoonful of standard cod-liver oil!

RICE KRISPIES has not only potent food values, but has extra appetite appeal—so crisp, the delicious morsels crackle in milk.



KELLOGG'S CORN FLAKES is famously good in all delicious and nutritious fruit and cereal combinations. Let the appetite decide. *All* are good values.

FOOD VALUES IN THE PEP CEREAL BOWL

	Kellogg's Pep (1 oz.—1 cup)	Whole Milk (½ cup)	Sugar (tsp.)	Strawberries (6 medium)	TOTAL
CALORIES	107	78	17	20	222
PROTEIN, gm.	2.8	4		.4	7.2
CALCIUM, mg.	12.5	134		14	160.5
PHOSPHORUS, mg.	88.2	105		13.5	206.7
IRON, mg.	1.0	.22		.4	1.62
VIT. A, I.U.		160		25	185
THIAMIN, mg.	.25	.045		.015	.31
NIACIN, mg.	1.9	.12		.12	2.14
VIT. D, I.U.	400				400
ASCORBIC ACID, mg. (Vit. C)		1		32	33

KELLOGG CEREALS are made from WHOLE GRAIN or are restored to WHOLE-GRAIN NUTRITIVE VALUES in thiamin, niacin and iron.

Knoblauch, Jeanne Laura: Colorado A. & M. Col.; Scripps Metabolic Clinic, La Jolla, Calif.
Koulbanis, Philomena Caputi: Rhode Island State Col.; Johns Hopkins Hosp. and Hammond G. H., Modesto, Calif.
MacDowell, Katherine Stevens: Cornell Univ.; Johns Hopkins Hosp. and Hammond G. H.
Macedonio, Josephine Veronica: Marywood Col.
Madden, Norma Jean: Indiana Univ.; Fitzsimons G. H.
Marsh, Grace Truman Burford: Univ. of Tennessee; R. H., Ft. Bragg.
McNeer, Alice Mae: Colorado State Col.; Fitzsimons G. H.
Mullady, Jane Marie: Marywood Col.
Phelps, Dorothy Jean: Cornell Univ.; Cincinnati G. H.
Rea, Betty Clara: Carnegie Inst. of Tech.; Fitzsimons G. H.
Reynolds, Barbara Kinney: Boston Univ.; Fitzsimons G. H., and C. H., Camp Carson.
St. John, Nettie Lavinia: Univ. of Connecticut.
Smith, Charlotte Elizabeth: Univ. of Cincinnati; Jewish Hosp., Philadelphia.
Stanford, Gwendolyn Jane: Immaculata Col.; Valley Forge G. H., Phoenixville, Penn.
Sticht, Marian Anna: Univ. of Wisconsin; Cook County Hosp.
Stiles, Louise L.: Georgia State Col. for Women; Oliver G. H., Augusta, Ga.
Sturdevant, Jean Ethel: Univ. of Nebraska; Scripps Metabolic Clinic.
Trainovich, Virginia Ann: Univ. of New Hampshire; R. H., Ft. Bragg.
Verseck, Dora Viola: Iowa State Col.; Madigan G. H., Ft. Lewis, Wash.
Weber, Dorothy Charlotte: Univ. of Wisconsin; Univ. of California Hosp.
Wright, Helen Catherine: Kansas State Teachers Col.; Fitzsimons G. H.

The following Medical Department Dietitians were promoted during the month of April 1945:

Second Lieutenants to First Lieutenants[1]

Hickman, Mary Catherine, R-1121
Waugh, Vera Doris, R-981
Thomas, Lois Irene, R-712
Davis, Betty Lou, R-815
Pardew, Anna Louise Bonner, R-680
Swingle, Constance W., R-625
Clark, Ann A., R-1104
Curley, Alice A., R-765
Morlan, Una, R-33
Smith, Evelyn A., R-366
Theis, Ethel J., R-627
Barr, Blessing H., R-322
Eicher, Dorothy L., R-330
Goldstein, Beatrice F., R-990
Kaufmann, Martha Ross, R-989
McClave, Harriet Bluebell, R-880
Ogden, Mary Grace, R-912
Seckinger, Gertrude A., R-1051
Struthers, Charlotte O., R-393
Taylor, Lenore D., R-120
Werner, Gertrude A., R-284
Wornom, Kathryn A., R-858
Voorhees, Abbie A., R-1078
Kenneck, Irene P., R-2
Love, Lorraine M., R-864
McAndrew, Catharyn K., R-665
Meyer, Alice L., R-855
Mulcare, Dorothy B., R-385
Perkins, Helen C., R-767
Lewis, Grace H., R-258
Moehl, Adele M., R-91
Spehar, Anne D., R-983
Kesner, Helen Lucille, R-560
Toreson, Ruth Jane, R-995
Myers, Hermien Ruth, R-636
Langdon, Dorothy Juanita, R-94
Carson, Ruth Ann, R-307
Lieberman, Doris, R-477
Arthur, Margaret Lipscomb, R-1000
Stack, Mary Elizabeth, R-38
Lynch, Helen L., R-552
Hornbaker, Dawn Lorraine, R-920
Van Orden, Mary Adele, R-151
Bishop, Cynthia, R-562
Kelly, Eileen Louise, R-750
Mathes, Margaret Stevens, R-916
Weissblatt, Vivian Grace, R-681
Boudeman, Maxine Evelyn, R-559
Adler, Margaret Lorraine, R-857
Backemeyer, Luccile Ida, R-30
Baron, Marie Eleanor, R-977
Bollenbach, Doris Marguerite, R-272
Brosius, Julia Levitskey, R-802
Burt, Gertrude Leone, R-541
Garner, Mary Jane, R-1091
Pilny, Maria Arlene, R-261
Wagner, Virginia Fessenden, R-315
Wark, Jane Margaret, R-1216
Makibbon, Jane M., R-1154
Milsom, Alice, R-1273
Sherman, Freida L., R-1116
Swenson, Gladys B., R-844
Thompson, Thelma L., R-1140
Wides, Ida, R-811
Emerson, Pauline Henrietta, R-51
Foster, Roberta Louise, R-1077
Hunt, Gladys Virginia, R-2046
Long, Anna Margaret, R-1122
Madzik, Olga, R-1228
Oettle, Agnes Mary, R-1276
Rose, Marjorie Elizabeth, R-1250
Sledge, Wilma Eloise, R-757
Jepson, Isla Lorene, R-39
Ross, Eloise, R-548
Bey, Florence L., R-271
Justin, Ruth E., R-1074
King, Grace R., R-1307
Jubb, Ruth Anna, R-1103
Griffin, Lucile Scott, R-500
Harris, Nevella, R-372
Kirkpatrick, Mary Phyllis, R-654
Knudson, Pauline Barrows, R-557
Richert, Mary Margaret, R-643
Wilbert, Amy Ardellar, R-425
Dahlgren, Fern Viola, R-590
Kessel, Harriet Natalie, R-704
Smith, Louise Phelps, R-196
Freidman, Beatrice Ruth, R-117
Higgins, Charlotte Margaret, R-432
Miller, Mary Margaret, R-801
Johnson, Kay Louise, R-589
Finkenbinder, Jean Ellen, R-658
Muske, Doris Emma, R-641
O'Donnel, Mabel, R-542
Shamburger, Elizabeth, R-741
Henningsen, Nell Newton, R-312
Moore, Marie Whitman, R-609
Holthouse, Mary Margaret, R-575
Jordan, Gladys Elizabeth, R-468
Kaiser, Dorothy Mary, R-907
Maertens, Helen Mary, R-346
Wiedl, Mary Judith, R-825
Ward, Nellie Ruth, R-31
Christiansen, Astrid Klock, R-24
Koerting, Rebecca Katharine, R-310
Mourninghan, Frances Margaret, R-116
Remington, Mary Grace, R-450
Rosenberger, Margaret, R-163
Farrel, Aileen Margaret, R-752
Gilberg, Helen D., R-36
Carter, Mary Margaret, R-963
Miller, Bernice Marie, R-23
Barker, Margaret Elizabeth, R-640
Brockbank, Patricia, R-939
Kalcevic, Frances Barbara, R-661

First Lieutenant to Captain

Bates, Helen Langdon, R-456

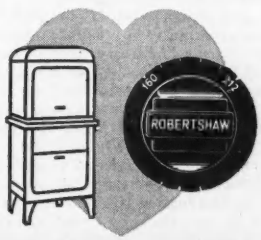
[1] *Editor's Note:* Beginning in this issue the list of those promoted will appear according to the order in which promotions were granted—not according to alphabetical order as previously.

at your Dishwasher

DISHES AND GLASSWARE should not only *be* clean, they should *look* clean. The first essential is an adequate supply of hot water. Then be sure the wash water temperature does not exceed 130°; that the rinse water temperature does not fall below 180°.

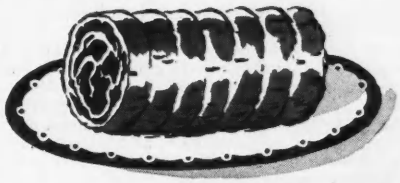
You can't get these temperatures by manual operation. Dependable thermostatic control is a "must". With Robertshaw thermostats, the correct temperatures are automatically maintained – and you can depend on clean, sterile dishes and silverware that help build customer confidence in the cleanliness of your establishment. You also cut fuel costs – get faster service – with less labor.

Send for booklet, *The Heart of the Cooking Appliance.* It gives essential data on maintenance and operation of Robertshaw thermostats for dishwashers—and information on Robertshaw controls for ranges, ovens, steam tables and coffee urns. When buying new or additional equipment, insist on Robertshaw controls.

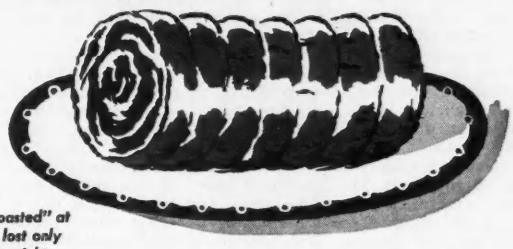


Robertshaw
THERMOSTAT COMPANY, Youngwood, Pa.
COMMERCIAL AND INDUSTRIAL DIVISION

HOW TO MAKE MEAT GO FURTHER



Roasted at 450°F., actually lost 33% of weight.



"Slow-roasted" at 300°F., lost only 15% of weight.

And Still Give Roasts and Gravy

RICH, BROWN COLOR

With meat restricted and so high priced, here's how to get up to 27% more servings.

"Slow-roast" beef, veal, lamb, and chicken at 300°F. You get less shrinkage; juicier, tenderer, more nutritious meat; better flavor; more uniform cooking. You save fuel; save constant watching; save spattering and burning.

How to Add Rich Brown Color

The only drawback is—the roast and gravy may look light and pale. To overcome this, (1) "wipe" roast with Kitchen Bouquet *before cooking*—so it gets a deep brown, rich luscious crust. (2) Add a little Kitchen Bouquet to the gravy. *See* it add the rich brown color that spells perfection. See how it brings out and *magnifies* the true meat taste.

Make This Test

Your chef will welcome this timely suggestion. Try it for two weeks and count the difference in your actual meat bills. Start now! Order Kitchen Bouquet today!

Product of
Grocery Store Products Sales Company, Inc.
New York 17, N. Y.

KITCHEN BOUQUET
in pints, quarts, gallons

Book Reviews

Food Service in Institutions. Second edition. By Bessie Brooks West, M.A., Professor of Institutional Management and Head of Department, Kansas State College, and LeVelle Wood, M.S., Associate Professor of Institutional Management, Kansas State College. New York: John Wiley and Sons, Inc., 1945. Cloth. Illustrated. Pp. 589. Price $4.75.

The first edition of this book was qualified in this JOURNAL for May 1938 as the "first adequate textbook for a general course in quantity food service." In its second edition it is still the book par excellence in the field. Now expanded, it moves ahead with the times to include the currently pertinent subjects of meat extenders, frozen and dehydrated foods, personnel and labor problems, legal aspects of food services, and industrial food services. To the food service director or to anyone interested in foods, food production, and the mechanics of housekeeping, there is not a dull paragraph in any of the 589 pages.

The reader's interest is immediately stirred in the opening chapter on the development of food services in institutions, with its pleasant vistas of a more bountiful and red-pointless day, overflowing with choice offerings of a carnose nature, and its views of the beautiful orderliness of the modern food-serving unit.

The authors then proceed to the basic factors in meal planning for large groups—what some have called the tools—with which that mighty task, the feeding of large groups, can be done effectively and efficiently. The whole first section, 297 pages, is devoted to foods, specifically: meal planning, food preparation, services, and storage, with everything one needs to know concerning the selection, principles of cooking methods, food standards, service, and so on, of all kinds and types of food. Space and time do not permit a detailed enumeration of every excellent feature in this section, but it appears that nothing of practical use has been omitted, from tables of proper storage temperatures for all food, to detailed outlines of accepted standards for food and how these may be attained by institutional methods of preparation.

Section II, covering the organization and administration of food service, devotes nearly a hundred pages to such subjects as preparation or training of the food service director, organization of food services, labor policies and management, and cost control. Methods of making job analyses and writing job specifications, how to effect economy of motion and reduce fatigue, and innumerable other valuable data are given.

Section III devotes over 130 pages to plans and location of food service units of all types, the architectural features of each, the fixed and movable equipment of the food service unit, the selection and care of the equipment, and finally the furniture, china, glass, and silver of the dining room. For good measure, in a book already brimming over with valuable information, an appendix is included which gives a suggested outline for courses in institutional management.

Undoubtedly this is the most useful book the dietitian could have at present. In fact, no one responsible for large group food services, whether dietitian or not, experienced or not, could fail to profit by a study of its contents. Incidentally, one of the most gratifying features of the book is the liberal education it offers regarding the purposes of and results attained by the American Dietetic Association. Even to this reviewer, quite conversant with the work of the Association and its members over a number of years, it was enlightening to note the tremendous amount of original and basic spadework toward the development of a truly scientific approach to food production that has emanated from the Association through its mouthpiece, this JOURNAL. For instance, of the nearly 250 references to leading periodicals in the hotel, restaurant, hospital, and scientific and professional fields, listed by the authors, over 90, or around 35 per cent, were to this JOURNAL—in itself, weighty evidence, if such evidence were needed, that dietitians are "doers," not merely academic theorists.

The Psychology of Diet and Nutrition. By Lowell S. Selling, M.D., Director of the Psychopathic Clinic, Recorder's Court, Detroit, and Mary Anna S. Ferraro, M.S., Director of Dietetics, St. Vincent's Hospital, New York. New York: W. W. Norton & Company, Inc., 1945. Cloth. Pp. 192. Price $2.75.

This book, the first of its kind which has come to our attention, is appropriately a collaboration between a dietitian and a psychiatrist and should prove useful to professional people in the fields of medicine and dietetics.

The theoretical aspects of the subject are duly covered in the first chapter on "The Basic Psychology of Nutrition." But the real strength of the book lies in the succeeding chapters where application is made to actual situations in which psychological principles are used to explain or solve dietetic problems. The influence of the well-balanced and pragmatic thinking which can only be the result of years of dietetic experience is evident in these chapters. Added to this, the discussion of the development of food customs and aversions, for example, has the benefit of sound reasoning along psychological and sociological lines. The authors acknowledge that without the assistance of Frances Stern of the Boston Dispensary the book would never have been written. They also acknowledge the assistance of Dr. Margaret Mead, Committee on Food Habits, National Research Council, and Dr. Robert S. Goodhart, Chief of Industrial Feeding Programs Division, Civilian Food Requirements Branch, WFA, among those who supplied ideas and material.

We find the chapter on "Children's Feeding Problems" excellent, embodying many sound and sensible precepts. Parents and teachers, as well as dietitians and psychologists, might read this chapter with profit and even with gratitude. Suggestions of Ada Hart Arlitt, Miriam Lowenberg, Rowena Schmidt Carpenter, in addition to those mentioned above, were incorporated, yet the material is compact, covering only 28 pages.

The chapters on "Problems Due to Psychological Maladjustments" and "The Dietary Significance of Mental Disorders" also deserve special mention. The deviation from "hard and fast rules for better eating" in certain cases, urged by Frances Stern, and mentioned in the chapter on children's feeding problems, is reemphasized in the discussion of aversions which seem to have some physical basis, *i.e.*, allergy, even though no direct evidence is present. In connection with the latter, it is stated that "there are few foods for which a substitution cannot be made in order to provide an adequate diet, hence the forcing of any particular food or foods would be inhumane, either physiologically or psychologically, or both. . . . Strangely enough, only recently have the authors begun to believe that food fads in older people, particularly if they cannot be traced to cultural influences and habits of eating in the family, or to identification with loved or hated persons, should be treated as physiological weaknesses. The important point in comprehending the significance of physiological or psychological aversions, from the nutritionist's standpoint, is to see that proper substitutions are made where rejection of a food or foods might interfere in the proper balancing of the diet. Unfortunately this attitude is foreign to the customary procedures carried on in the prescribing of diets because the physiological outweighs the psychological in the purposes of the prescribing physician, and the administering dietitian has to adapt the patient to the prescription rather than the prescription to the patient. Nevertheless, although the psychological side is so important, food rejections should first of all be considered physiologically rather than psychologically."

In the chapter on "The Dietary Significance of Mental Disorders" the point is stressed that from those who are seriously unsound or seriously maladjusted, we can learn the basic nature of the mental processes, and gain a greater comprehension of those lesser intellectual, emotional, and personality changes which are mild representations of severe mental illness. The authors tell when overeating, abnormal appetite, food rejection, etc. can be considered as physiological phenomena and when they can be considered abnormal behavior, *i.e.*, symptoms of psychological maladjustment, as well as when abnormal eating habits can be considered "not significant."

The chapter on "Food and Nutrition as They Affect theHome" contains many practical suggestions and some enlightening interpretations of family problems in terms of the family food supply and food habits. "The Feeding of Large Groups" includes a discussion of industrial feeding and school lunches.

"The Special Psychology of the Patient on a Diet" deserves the attention of dietitians, and especially student dietitians. Here again Frances Stern is cited as the first to call attention to the fact that "the patient's personality may be the most important feature in prescribing the diet."

In the face of the recent overenthusiastic claims for the wonders which nutrition can perform in the way of mental improvement and personality changes, the following excerpts from the chapter on "Effect of Diet on Behavior and Personality" are refreshing: "Many of the layman's ideas about proper nutrition are carried out to a degree which is not justified by our experimental knowledge of nutrition at the present time. . . . It is easy to see that it would take an immense amount of starvation, almost to the point of cachexia, to make a child's mind function so inadequately that he could not reveal his true basic intelligence. . . . Children

Dietitian's Dilemma

Think how swell it would be to lock your kitchen at 8:30 every evening! What a grand way to ease your help-shortage problem. "But is it practical, will it work?" you ask. Truth is, the idea's as usable as a *Toastmaster* toaster (that's 100%) and here's how some alert dietitians overcome what, at first, appear to be insurmountable obstacles to its use.

A bit of cooperation is needed from nurses who've been in the habit of "seeing what's in the kitchen" up until midnight. Extras for the patient must be anticipated for delivery to the floors before closing time. And if you're already serving the evening meal at, say, 5 o'clock from central food service, it's no trick to have dishes returned for washing before the kitchen staff goes off duty.

Serving night nurses and interns isn't the problem it seems, either. As they leave the cafeteria following their evening meal, they pick up their night lunch and take it to their floor diet kitchens. Obviously, those working the 11 p.m. to 7 a.m. shift will want larger lunches and these can be delivered at the time patient extras are sent to the floors. Reminds you of the convenience of *Toastmaster* toasters, with models that meet every capacity requirement.

You probably have a part-time, midday sandwich-maker now. Why not let her continue preparing food after the noon cafeteria lines are closed? In no time at all, night lunches can be wrapped and ready to go. Or, if your diet kitchens are equipped with *Toastmaster** toasters, you can supply the ingredients for toasted sandwiches that will be both appetizing and nourishing. These famous toasters are not available now but they are well worth waiting for.

Take care of your *Toastmaster* toasters and they will serve you well. If you need repair parts, however, they are available through any of the 32 Authorized Toastmaster Products Service Stations or the factory. Address: TOASTMASTER PRODUCTS DIVISION, McGraw Electric Company, Elgin, Illinois.

*"TOASTMASTER" is the registered trademark of McGraw Electric Company.

TOASTMASTER Toast

The National Habit
Wherever Folks Eat!

who are very hungry do not respond well to tests, rather as a result of distraction because of the hunger pangs or the appetite reactions than to a lack of the foodstuffs circulating in the system. . . . Observation of undernourished but not hungry children leads one to believe that such children are a little bit more alert than their better fed confreres . . . are also thinner, more wiry, and more able to move about quickly. . . . Such behavior would give an observer an impression of alertness, quickness, and even heightened intelligence that controlled scientific findings might very well disprove."

The final chapter on "Educating the Food Consumer" makes clear the problems inherent in any attempt to discover a few workable principles that can be applied in the teaching of nutrition to the public.

Everyday Nutrition for School Children. By E. Neige Todhunter, Ph.D. University, Alabama: University of Alabama Extension Division, 1945. Paper. Pp. 57. Price 25 cents; in quantities of 10 or more, 20 cents; 100 or more, 17 cents.

Prepared for distribution among teachers in the public schools in the South, this book is intended not as a text in nutrition but to "help the teacher to see that she can do much to improve the health and well being of southern children and their families through her work in the classroom." The author states that food selection is a matter of habit based on those foods which the child has had an opportunity to learn to know and that the school is charged with the responsibility of developing these habits in the child through wise educational procedures, with the assistance of the school lunchroom manager and others in the school and community.

The content of the book consists of a list of teaching objectives, the emphasis of all of which is on teaching the children to like a wide variety of foods and to develop other desirable habits, rather than to absorb a body of facts about nutrition; planning the nutrition program; judging good nutrition; an adequate breakfast and an adequate lunch, both illustrated with charts and examples; the basic seven food groups, including daily plan adapted to Alabama's food supply; some everyday nutrition questions; stories from the literature on nutrition; activities and teaching suggestions for all types of classes; evaluating the nutrition program; references for teachers and pupils. All of the material is interestingly presented and sound.

Egg Cookery. By Lily Haxworth Wallace. New York: M. Barrows and Company, Inc., 1945. Cloth. Pp. 169. Price $2.

With increased pressure on the already stringent restrictions concerning rib, rump, and roast beef rare, the troubled budgeteer of ration points may find some surcease in the variety of meatless breakfast, luncheon, and dinner suggestions offered in *Egg Cookery*.

Other than the now scarce but ever-popular "bacon and," eggs to a great extent have not been sufficiently appreciated in this country, except as one of many ingredients—a minor, even though an important contribution. The French for generations have realized the gustatory appeal of a delectable omelet, a delicate soufflé, and eggs play an important part in Chinese and other national cuisines. If through force of circumstances and because of nutrition education (for who within reach of radio, press, and progress, can have remained unaware of the 4-egg per week N.R.C. "must"?), we become greater consumers of *l'oeuf*, such a book as the above, consisting of 23 chapters devoted almost entirely to recipes, will be a veritable treasure.

Following sections on nutritive value, tests for freshness, selection, home preservation and storage of eggs, there are directions, concise and consecutive, for coddled, cooked soft or hard, fried, scalloped, scrambled, and stuffed eggs; egg dishes as entrées, desserts, salad dressings, sandwiches, sauces and savories; and soufflés and omelets from A to Z. Among the last, should not the title read "Eggs Foo Yeung" (not "Yung")?

If eggs are to be your dish, there would seem to be sufficient variety to satisfy the most capricious, unless one encounters a reactionary such as the father in a recent best seller who declared with vehemence that if there was one thing on earth he detested, it was "good home cooking."

Essentials of Allergy. By Leo H. Criep, M.D. With a Foreword by Robert A. Cooke, M.D. Philadelphia: J. B. Lippincott Company, 1945. Cloth. Illustrated. Pp. 381. Price $3.

This manual, written for the undergraduate medical student as well as the practising physician, rather than the specialist, is therefore suitable as a reference for the dietitian. The author, diplomate in internal medicine, is also consultant in allergy to the medical service of the Veterans Administration.

Commendable features include a glossary of specific hypersensitiveness in outline form, case reports, and the arrangement of the subject matter in outline form, with little space wasted in the discussion of divergent opinions. Sufficient references to the literature are included for those who wish to expand their knowledge of the subject.

Clinical Roentgenology of the Digestive Tract. Second edition. By Maurice Feldman, M.D. Baltimore: The Williams & Wilkins Company, 1945. Cloth. Illustrated. Pp. 769. Price $7.

The second edition of this book brings the material up to date. The book has been revised, rewritten and shortened to eliminate all unessential data. The purpose is to present a clinical roentgenological consideration of diseases of the gastro-intestinal tract, as an aid in roentgenologic diagnosis for the roentgenologist, gastro-enterologist, student, and general practitioner. The author, who has had 26 years of experience, has endeavored to cover every phase of the gastro-intestinal tract, with the object of presenting the diagnostic value of the roentgen examination.

Hundreds of fine reproductions of roentgenograms are included, along with clear and detailed interpretation.

Student Dietitians Wanted in Government Hospitals. A very attractive, illustrated folder, *Opportunities for Student Dietitians in Government Hospitals*, released by the U. S. Civil Service Commission, has announced a new examination for student dietitians, to be held in cities throughout the country on dates to be specified to applicants. The brochure describes the training given in Army, Veterans Administration, and Public Health Service hospitals, and pictures the dietitian at work in various capacities.

It is stated that students begin training at Veterans Administration, U. S. Public Health Service, and Army hospitals at $1,752 a year, including overtime pay, and after 6 months of satisfactory service are promoted to $1,970 a year. Deductions are made from the salary when quarters or subsistence are provided. Those who complete 6 more months of training in Army hospitals are eligible for appointment in the Army as Medical Department Dietitian with the rank of second lieutenant. Second lieutenants are paid $1,800 a year, plus allowance for quarters and subsistence. Students who complete their training at Veterans Administration or U. S. Public Health Service hospitals are eligible for appointment as Staff Dietitian at $2,190 a year. Appointments are war service appointments, to extend for the duration of the war and in no case more than 6 months beyond the end of the war.

The following courses included in the training program have been approved by the American Dietetic Association: Walter Reed General Hospital, Washington; Lawson General Hospital, Atlanta; Brooke General Hospital, San Antonio; Fitzsimons General Hospital, Denver, Colorado; and Hines Hospital, Hines, Illinois.

To qualify, applicants must have completed, or expect to complete within 6 months, at least 36 semester hours of appropriate study in a college or university, and must pass a written test. Full information is contained in the announcement which, with appropriate application forms, may be obtained from the Commission's representatives at first and second-class post offices, or by writing to the U. S. Civil Service Commission, Washington 25, and requesting Announcement 360. Applications will be accepted until further notice, and examinations will be given as the needs of the service demand.

An Explanation. The publication of this issue of the JOURNAL has been unavoidably delayed due to high-priority Army and Navy orders at the Waverly Press.

Here Are the Finest Nutrients in Nature's Menu...

Complete proteins, important vitamins, calcium and other essential nutrients are supplied, in palatable form by Ice Cream. One ordinary serving of Ice Cream (1/6 quart) makes an appreciable contribution to the daily protein intake of an adult, and takes care of 1/6 of an adult's daily calcium needs. Ice Cream is a good source of Vitamin A and Riboflavin; and it also contains the other vitamins found in milk. Patients welcome Ice Cream in their diets, and while they're enjoying it, they benefit by its nutritive value.

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Current Literature

Contributed by Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, Boston; Margaret Shatswell Price; and the Journal Staff.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 69, March 1945

*Ascorbic acid, riboflavin and thiamine content of chocolate milk. A. D. Holmes, C. P. Jones and W. S. Mueller.—p. 157.

*Ulcers in infancy and childhood. E. J. Donovan and T. V. Santielli.—p. 176.

Chocolate Milk. Eighty per cent of the chocolate milk in this country is consumed by persons who otherwise would not be drinking any milk. Samples of chocolate milk prepared with two types of cocoa contained slightly less ascorbic acid and thiamin than whole pasteurized milk from the same herd; riboflavin was about the same. Families who buy chocolate milk should be cautioned to select that made from whole milk to ensure a high vitamin A content, since many dairies use skim milk in preparing the chocolate beverage.

Ulcers in Infancy. Several case histories of ulcers are presented in an attempt to show that both gastric and duodenal ulcers are possible in infancy and childhood. Few ulcer diagnoses are made until adult life but histories show that the ulcer began much earlier. Treatment in these early cases has been about the same as for adults; surgical intervention has been used only when response to medical care is poor.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 209, March 1945

*The coincidence of allergic disease, unexplained fatigue, and lymphadenopathy; possible confusion with mononucleosis. T. G. Randolph and R. A. Hetlig.—p. 306.

Allergy and Fatigue. In a group of student nurses, 59% had a past history of allergy varying from asthma to sick headaches. Half the students in the positive group experienced periods of fatigue which was unrelieved by rest; this is a typical serum sickness symptom. Over half the allergic group had had swollen cervical glands which led to a diagnosis of mononucleosis in one-third of the cases. The allergic students had twice as many sick days during training as the negative group.

AMERICAN JOURNAL OF PUBLIC HEALTH AND THE NATION'S HEALTH

Vol. 35, March 1945

*Influence of psychological factors on the nutrition of children. M. J. E. Senn.—p. 211.

Future implications of the nutritive value of the American wartime diet. F. G. Boudreau.—p. 243.

The wide significance of nutritional deficiency. Editorial.—p. 273.

Nutrition of Children. The personalizing of clinical medicine in the prenatal and well baby clinics gives emphasis to the emotional and intellectual needs as well as to the physical requirements of parent and child and exemplifies the ideal in preventive medicine, not in narrow terms of nutrition but in the broad aspects of human growth and well-being. This article should interest every dietitian.

BOLETIN DEL INSTITUTO INTERNATIONAL AMERICANO DE PROTECCION A LA INFANCIA (BUENOS AIRES)

Vol. 18, No. 4, December 1944

The protection of childhood in Chile. Its new organization. R. Berro.—p. 563.

Policy of nutrition and its application in the Argentine Republic. E. Moresco.—p. 618.

*School lunchrooms. E. S. Yannuzzi.—p. 674.

School Lunchrooms in Uruguay. School lunchrooms in Uruguay were maintained entirely by private funds until 1930. At that time legislation authorized the establishment of school lunchrooms under the Council of Primary and Normal Education. Private support continued to be substantial, and in 1944, of 481,434.70 pesos allocated to this project, 96,000 came from private sources. There are 681 lunchrooms throughout the state, 20 being in Montevideo. The average capacity is 150 children, but attendance may be over 200. The lunch may be served at 11:30, or there may be two seatings, one at 11:30, the other at 12:30. Each lunchroom is staffed by a manager and assistant manager, a cook and cook's helper.

The primary purpose is to improve the condition of undernourished children. Selection for attendance is made by the school visitor or the school physician. Each child assigned to the school lunchroom has a card recording his complete medical and social history. Data is obtained by the school visitor. Most cases of malnutrition are due to poverty; only rarely is faulty discipline responsible.

In 1940, 1487 children were examined. Of these, 88.1% were suffering from malnutrition, and dental caries was apparent in 86%. In 1943, 2378 examinations were made, and 49.4% of the children were pronounced undernourished, but only 53% showed dental caries. This may be the result of work in oral hygiene.

Other Latin-American countries listed as having school lunchrooms are Argentina, Ecuador, Paraguay, and Venezuela.

The author of the article, Dr. Yannuzzi, is school health inspector in Montevideo, and for four years was a member of the Central Commission for the Nutrition of School Children.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 127, April 7, 1945

*Use of aluminum hydroxide and other nonabsorbable antacids in treatment of peptic ulcer. E. N. Collins.—p. 899.

*Physical impairment and job performance. V. K. Harvey and E. P. Luongo.—p. 902.

*More life for you. Current Comment.—p. 923.

*Hypotension in Cuna Indians. Current Comment.—p. 924.

Vol. 127, April 14, 1945

*The clinical management of weakness and fatigue. F. N. Allan.—p. 957.

*Physical impairment and job performance. V. K. Harvey and E. P. Luongo.—p. 961.

Anemia therapy: Review of various liver and stomach fractions and iron salts. E. J. Teeter.—p. 973.

*Protein: Its role in human nutrition. F. J. Stare and C. S. Davidson.—p. 985.

*Carbonic anhydrase. Editorial.—p. 990.

*United States Cadet Nurse Corps. Editorial.—p. 991.

Vol. 127, April 21, 1945

*Inflammatory lesions of the upper gastrointestinal tract. A. H. Aaron.—p. 1025.

*Importance of adequate protein nutrition in pregnancy. P. F. Williams.—p. 1052.

Ferrous vs. ferric iron. Editorial.—p. 1056.

Vol. 127, April 28, 1945

*Protein deficiencies in pregnancy. R. E. Arnell, D. W. Goldman and F. J. Bertucci.—p. 1101.

*Protein nutrition in problems of medical interest. F. J. Stare.—p. 1120.

Peptic Ulcer. During the past 8 years the incidence of peptic ulcer based on total registration each year has increased 100%. Nevertheless the percentage of patients having operations for duodenal ulcer during the same period has not notably increased, as shown in the chart. Although it is realized that this curve deals with a consultation practice, that a certain percentage of patients have operations elsewhere, that indications for surgery change from time to time and that more patients with surgical problems may be seen in some years than in others, it shows a trend in the management of this problem. The intensity of therapy naturally varies with the severity of the disease and must be individualized. Although hospital observation at the beginning of treatment has many advantages, in wartime most patients with peptic ulcer continue working during treatment. Except for patients having pyloric obstruction, the diet has been liberalized in recent years. The gain in weight in undernourished persons has been gratifying. During the first week a bland diet is used. For patients having massive hemorrhage, ground meat is used at the beginning of treatment. Otherwise meat, cooked vegetables and fruit are added during the second week, and within one month the patient has a well-balanced diet except for the avoidance of seeds, skins and coarse fibers. Supplemental vitamin therapy is adjusted to the nutritional requirements of the individual. A glass of milk and cream, malted milk tablets or other foods selected from the diet list are used at least once between meals, and the patient is advised to continue interval feedings the rest of his life. During the first month's treatment most of the patients have interval feedings every second hour during waking hours. The patient is advised to resume 2-hr. feedings each year at the times of seasonal recurrences, upper respiratory infections, and emotional disturbances, even though there is a continued absence

LONG ISLAND DAILY PRESS, MONDAY, MARCH 13, 1944.
PLEASE RUSH...
HANDLE CAREFULLY
This box contains BANANAS for a sick child.
BANANA BABY ONE YEAR OLD — "Wotta birthday!" says Ottilie M. Schmeltzer of 117-24 126th Street, South Ozone Park, celebrating her first anniversary with a diet of bananas, just about the only food she has had since birth. Ottilie has a celiac condition and must have bananas to keep alive.
RUSH

War or no war . . . Celiac babies get bananas

Yes, all through the war celiac babies have been getting their needed quota of bananas.

At the request of the United Fruit Company, the banana jobbers of the country set aside a portion of their scant supplies to take care of the needs of celiacs and others for whom doctors prescribe bananas. Even during acute shortages, holders of certificates from physicians prescribing bananas were able to get them.

Ever since the discovery by the medical profession 20 years ago that the carbohydrates in the fully ripe banana are well tolerated and utilized by infants and children suffering from celiac disease,* bananas have been prescribed by doctors as a definite part of the dietary regimen for celiac patients.

The banana contains adequate pectins, and its fat content (.2%) is almost negligible. It also has a plus value from the nutritional standpoint because it is a good source of vitamins and minerals.

When the ships which carry bananas in peacetime return from their war service, there will be no need for doctors' certificates, and everyone who wishes bananas, even just because he likes them, will be able to have them.

*A form of chronic intestinal indigestion, usually occurring in infancy or early childhood, in which fats and most carbohydrates are not well tolerated and utilized.

Fruit Dispatch Company

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of symptoms. Aluminum hydroxide gel is usually given every 2 hours during waking hours in the first month's treatment and on alternate hours with the feedings, so that every hour the patient takes either food or antacid. The size of the dose depends on determinations of gastric acidity and the severity of the symptoms but is never less than 8 cc., and the bedtime dose is never less than 30 cc. If the patient has severe night pain associated with continuous night secretion, the bedtime dose is repeated at midnight and at 3 a.m. during the first week's treatment. Constipation is prevented by adding equal parts of heavy magnesium oxide and calcium carbonate to the evening doses of aluminum hydroxide gel. This enhances the antacid effect, and usually 4 cc. taken two or three times during the evening hours proves adequate. The amount is reduced as the residue in the diet is increased. When the patient is on a well-balanced diet he seldom needs the addition of any laxative substance. The plan of medical management of peptic ulcer at the Cleveland Clinic has proved satisfactory in 3000 cases during the past 8 years. During the same period the incidence of peptic ulcer has increased 100%, while the percentage of patients having operations for duodenal ulcer has not notably increased. Supervised management over the lifetime of the patient should be adopted.

Physical Impairment. In general, the rate of absenteeism of females due to sickness, and of turnover due to "quits," can be expected normally to be higher. With regard to accidents, aside from the fact that females, as a group, are placed in less hazardous occupations, they normally can be expected to have a lower accident rate since, as a group, they are more painstaking and fastidious in job performance and they fear the consequence of accidents and therefore do not "show off." Further, they are more adaptive to routine and monotonous work.

Longevity. "More Life for You in the Best Years of Your Life" is the theme and title of a new series of electrically transcribed radio programs made available on loan for use by local medical societies or by local public health agencies when approved by the local medical societies, in which 23 prominent specialists are interviewed on health problems facing adults. In addition to the series now available, which constitutes 63 consecutive weekly broadcasts exclusive of the Health Heroes series for schools, transcriptions planned and soon to be released include one on summer health hints under the title, Keep Cool, ready about May 15, on public health problems, entitled Guardians of Your Health," ready approximately July 15, and a series in dramatized form dealing with mental adjustment problems under the tentative title, In Step With Life. By the end of 1945 there will be available a sufficient supply of transcribed programs prepared by radio professionals from authentic medical sources to keep any local medical society or health department on the air continuously for more than 2 years with a minimum of local effort. [Elsewhere in the same issue it is stated that the transcription entitled Diet and Food will have as participating experts Drs. C. A. Elvehjem, J. S. McLester, and George K. Anderson.]

Hypotension. It is suggested that a fundamental difference exists which leads to the development of hypertension in West Indians, a low incidence of hypertension in mestizos, and the complete absence of what is considered high blood pressure in Cuna Indians.

Fatigue. The patient who seeks advice because he feels weak and tired seldom realizes the complexity of the problem he presents to his physician. Unless he fears carcinoma or tuberculosis or is the type of person who enjoys receiving medical attention, he may think that he need not take up much of the physician's time for examination. All that he desires is a recommendation of a good tonic or vitamin preparation. Actual experience with the problem shows that there may be need for investigation utilizing all the resources of medical science. Certain conditions such as vitamin deficiencies and endocrine disorders, considered common causes of weakness by both the public and the medical profession, actually were rare (0.3 and 1.3% respectively) and not a single case of weakness due to liver trouble, "poor elimination" or low blood pressure was encountered in 300 cases.

Physical Impairment. The average accident frequency rate for the physically impaired was found to be higher than the average frequency rate for the able bodied. An excessive number of accidents in certain physical defect classes contributed heavily to the accident frequency rate of the impaired group. The productivity, both in quantity and quality, and the efficiency ratings of the physically impaired were found to compare favorably with those of the able bodied. Findings on increased short term sick absenteeism among the physically impaired show some correlation with the accident experience of this group and suggest that those workers who most often report minor sickness may be less resistant to fatigue and more likely to incur accidents. A much lower rate of turnover was found among the physically impaired than among the able bodied.

Protein. Good nutrition for an individual implies that he receive and utilize a suitable metabolic mixture of all substances necessary for health. This can be obtained only from food selected, processed, prepared, consumed, absorbed and utilized so that it furnishes in optimal amounts the individual's essential nutrients. Provision must be made not only for actual requirements but also for variations from the "normal" both in health and in disease, for the accumulation of some "reserves" and for differences in actual food intake due to food habits, individual tastes, and variations in economic status. Some 22 nutritionally important amino acids have been identified. Of these 10 have been shown to be essential for growth in the rat. Recent research has shown that at least 8 are necessary for the maintenance of nitrogen equilibrium in young human adults for limited periods. The term "essential" as applied to an amino acid means that body tissues cannot make that amino acid in sufficient amount to meet physiologic requirements, and therefore it must be obtained readymade from food. It also means that the amino acid in question is necessary for some essential physiologic process. The rate of growth, the maintenance of nitrogen equilibrium and the rate of regeneration of the plasma protein of an animal are the criteria that have been generally used to measure the essentiality of an amino acid. However, other methods of measuring the essential value of a given amino acid, based on specific physiologic function, may show a greater need for such amino acids over and above these requirements. Practically nothing is known of the quantitative requirements of each of the essential amino acids in man. Variety in the choice of foods is good nutritional practice, and this is particularly true of protein foods because the amino acids of one protein may supplement deficiencies of another protein source and thereby furnish a sufficient quantity of the essential amino acids. Food by mouth is the most effective route for the administration of protein. However, for some patients with considerable body protein depletion or with increased nitrogen catabolism, especially if associated with anorexia or disturbance of the gastrointestinal tract, it may not be possible to supply sufficient protein by mouth, and other routes of administration must be used. Concentrated protein preparations may be given by stomach tube, but in certain instances this procedure may lead to distention and diarrhea. Protein has been given intravenously, in the form of human plasma, human albumin, gelatin, various hydrolysates of casein and whole blood. Intravenously administered protein, although often a useful supplement to that given orally, is usually difficult to give in amounts sufficient to meet the daily requirement. The use of plasma or a hydrolysate of protein is not practical unless given in sufficient quantity to contribute effectively to the protein requirements. The amino acid requirements of man may differ both qualitatively and quantitatively from those of the rat, so that direct application of the results on animals to man cannot be made.

Enzyme Metabolism. Although the function of carbonic anhydrase in the red blood cell and in the gastric mucosa seems well defined, the physiologic significance of this enzyme in the brain and in the spinal cord is less evident. The intensity of metabolism in the central nervous system is high; it is possible that the carbonic anhydrase is part of the mechanism for the speedy removal of the resulting carbon dioxide.

Cadet Nurse Corps. "During the last year approximately 29,000 nurses graduated from all schools. Had 40% of these entered the armed services, the full Army quota of 10,000 additional nurses required by the Army in 1944 would have been exceeded."

Peptic Ulcer. "Peptic ulcer is not as rare in children as it is overlooked." Children with continued digestive disturbances should have their upper gastro-intestinal tract studied by means of the x-rays to reveal the possibility of the presence of peptic ulcer. In view of the fact that the psychosomatic factors are considered of great etiologic significance in peptic ulcer in the adult, what are these factors in childhood? We know that children present many psychiatric problems, but not necessarily of the same nature as those that occur in adults. Those in the adult are considered of direct relationship to the intense, active type, or "the doers." It is evident that we shall have to correlate those of the child and the adult in a consideration of causative factors. Early peptic ulcer patients will respond to a broad generous diet with an elimination of only the condiments and roughage, the most important factor being the time of the taking of their meals. They should have their three regular meals a day and, in addition, feedings between meals and at bedtime and should be awakened once at night for a feeding, which should consist of sweet cream, eggnogs or bread and butter. Alcoholic drinks should not be taken. The treatment of the diabetic was a failure on the strict, narrow diet list, and we must not fall into that error. Excess caffeine intake is to be avoided; but a cup of coffee, one half cream, once a day may satisfy a dietetic habit and give one a more cooperative patient. The same may hold for smoking. It has not been possible to show, in the gastric fistula

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- Or make coffee regular strength and allow to cool for *not more than three hours*—then pour over ice cubes in a tall glass.

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man, that restricted smoking produces any of the evidences mentioned under the psychosomatic factors. The second phase of the treatment is the most difficult, that is, the removal of the psychosomatic factors. Conclusions indicate that peptic ulcer in children may be overlooked. Hypermotility and irritability of the stomach in young people with a certain psychiatric makeup offers fertile ground for the formation of peptic ulcer. Peptic ulcer has been undertreated rather than overtreated. Diet, education, and the physician's interest in the patient's problems may prevent intractability.

Nutrition in Pregnancy. "It is an incontestable fact that a pregnant woman differs from other persons in her protein needs. To the basic need of the nonpregnant woman for material building and repair there are added during pregnancy the demands of an increased metabolism, the storage of nitrogen, the growth of the woman's body, the necessity for meeting needs of fetal growth and repair, the growth of the mammary tissue and the hormonal preparation for lactation. Under ordinary circumstances a desirable allowance of protein is considered to be 1 gm. per kilogram body weight in an adult, but nutritional authorities agree that an increase to 1.5 gm. per kilogram is safer to supply the demands of fetal and maternal growth and tissue repair in the latter half of pregnancy." Defects in the diet may be caused by certain factors: economy, ignorance, custom or habit, actual or supposed food idiosyncrasies and erroneous advice. All but the first of these factors could be overcome by proper nutrition. Students of the subject of nutrition have remarked that even in low economic groups an educational campaign of effective and intelligent nutrition teaching has been absorbed readily and used well. Restrictions in protein intake or deficiencies in this factor are almost invariably accompanied by restrictions or deficiencies of other equally important factors. The minor nutritional deficiencies often become apparent only under the diet efficiency test of pregnancy, when the physiologic strain of the condition reveals the borderline status of nutrition. Deficiencies in the protein content of the diet of the pregnant woman lower her nitrogen level, deplete the body tissues by utilizing them for the normal protein needs, lower the serum protein level content and may lead to nutritional edema. By altering the colloid osmotic pressure of the serum protein, the dietary protein insufficiency may predispose to the toxemias of pregnancy. Anemia, poor muscle tone of the uterus, lowered resistance to infection, and insufficient lactation may all result from a low plane of protein intake. Many such instances are occasioned by a long standing deficit, which may hinder digestion or absorption, or by excessive vomiting. Anemias of various types and degrees are frequent during pregnancy. It has not been found that a high-protein intake in the diet is capable of producing the specific toxemias of pregnancy. Strauss feels that the development of true toxemia of pregnancy can be prevented by maintaining the pregnant woman's plasma protein at a high level through adequate dietary protein and suggests an average of 130 gm. protein as an optimal amount in a balanced diet. The interrelationship of protein with other dietary constituents is a complex problem. It is generally agreed that dietary proteins are used more economically and stored to better purposes when their digestion and metabolism are associated with those of carbohydrates. The nitrogen-sparing action of carbohydrates is considered to be superior to that of fat. A large number of small meals appear to be more effective in protein economy than the same amount of food distributed over 2 or 3 meals. It is believed that the level of dietary protein has little or no effect on the vitamin economy. In persons or races in which calcium intake is low or absorption poor a high-protein diet may convert a calcium deficiency into sufficiency. This interrelationship should be significant in pregnancy. The first step in ensuring an adequate supply of breast milk of proper quality must begin in pregnancy. An adequate intake of varied proteins is essential to provide for the growth of the breast and to permit it to withdraw sufficient amino acids for synthesis to form the particular protein characteristic of the mammary secretory elements. It should be remembered that if enough protein is not furnished in the maternal diet to supply both maintenance needs and the protein of the milk secreted, a loss of maternal body tissue will occur. A high animal protein ingestion is necessary in lactation to supply liberally in the milk those proteins which cannot be synthesized in the body of the newborn. Just as the mother is instructed in the hygiene of pregnancy, so should she be individually instructed in the quantity and quality of food which she should eat.

Ferrous Iron. Although ferrous iron is likely to be tolerated better by human patients than is the more soluble ferric salts, there appears, from the most recent evidence with labeled (radioactive) iron, to be a real difference in the utilization of the two forms of iron in man. In experimental animals, on the contrary, the distinction seems much less obvious.

Protein Deficiency in Pregnancy. Although demonstrable degrees of protein deficiency are not common, subclinical deficiency is frequent. A study of the incidence of this deficiency, based on the dietary intake of 400 unselected pregnant women, showed that 18% had a protein intake less than half of the optimum recommended for the latter half of pregnancy and that almost 80% consumed diets which were classified as fair or less than fair. A study of the possible relationship of deficiencies in protein intake to certain laboratory and clinical data resulted in much less exact conclusions than a study of the incidence of protein deficiencies. In general, a significant relationship was found to exist between the protein content of the diet and the serum protein concentration and hemoglobin content of the blood, the average values being lowest in the deficiency group. These studies suggest that protein deficiencies may be of etiologic significance in eclampsia and preeclampsia and may increase the maternal morbidity and the fetal mortality. The birth weight is apparently not affected. In 11 cases of massive nutritional edema in pregnancy complete recovery ensued on a regimen the basic principle of which was reparation of the protein deficiency.

Protein Nutrition. "The simplest, most obvious and commonest cause of protein deficiency is lack of sufficient protein in the diet. This may be due to inadequate knowledge of what constitutes a sufficient protein intake, to poor economic status, to misinformation or to the existence of some local or generalized disease with resultant anorexia and dietary inadequacy. Such dietary insufficiency may not be limited to protein but may also include many other nutrients; in fact, uncomplicated protein deficiency rarely occurs in man." With protein intake adequate as to quantity and quality, there still exist many other important factors which may interfere with the ultimate delivery of adequate protein to the tissues. Digestion may be impaired in the presence of deficient gastro-intestinal secretions. Impaired absorption may be present in patients with edema, inflammation or tumors of the bowel, in conditions causing hypermotility of the bowel or diarrhea, or fistula. Protein deficiency is frequently initiated or accentuated, even to the loss of gastro-intestinal contents through repeated vomiting or diarrhea, by hemorrhage or by increased demand of protein as a result of fever and increased catabolism. Deficiency in protein may also result from destruction of protein in diseases accompanied by chronic exudation. Excessive loss of protein in the urine of patients with kidney disease and into serous cavities in other diseases may lead to protein deficiency. Furthermore, a negative nitrogen balance, with consequent loss of body protein, may be present for days to weeks following trauma such as burns, wounds, or fractures. In certain disorders of the liver, insufficient regeneration of plasma protein may be a cause of protein deficiency. Specific diseases are discussed in which protein nutrition is of particular interest, namely, kidney diseases, diseases of the liver, diseases of the gastro-intestinal tract, convalescence and overwhelming infection, diabetes mellitus, thyrotoxicosis, gout and allergy, anorexia nervosa, anemia, hypoglycemia, and hypoproteinemia primarily dietary in etiology. As in other types of nutritional therapy, good food by mouth is the most effective and satisfying way of administering protein. While temporary therapy with protein concentrates of various types is often valuable and even necessary, "it is only a highly nutritious diet over a long period which will give satisfactory results." Increasing the amount of protein in a diet is one of the best general ways to improve a diet, for protein foods are usually good carriers of many other nutrients, such as vitamins of the B complex and minerals. High protein diets are obtained simply by increasing the amounts of the better protein foods. The addition of a glass of milk, an egg, another serving of peas or beans, 1 more ounce of meat and a serving of cheese to a diet yielding 70 gm. protein will raise the protein quantity to 100 gm. These foods must be consumed, not merely ordered by the physician or served on the tray by the dietitian. It is frequently difficult to consume more than 100 gm. protein daily and one confined to bed may even have difficulty in consuming 60 to 70 gm. protein. Thus if it is desired to prescribe a good quantity of protein per day, as it frequently is, one must resort to supplementary nourishments with protein concentrates, such as Dietene, Aminoids, and Amigen. Protein concentrates may be incorporated into breads, cake, sandwich spreads, desserts, hot cereals, and so on, or may simply be stirred up into milk, bouillon or soups.

JOURNAL OF BIOLOGICAL CHEMISTRY

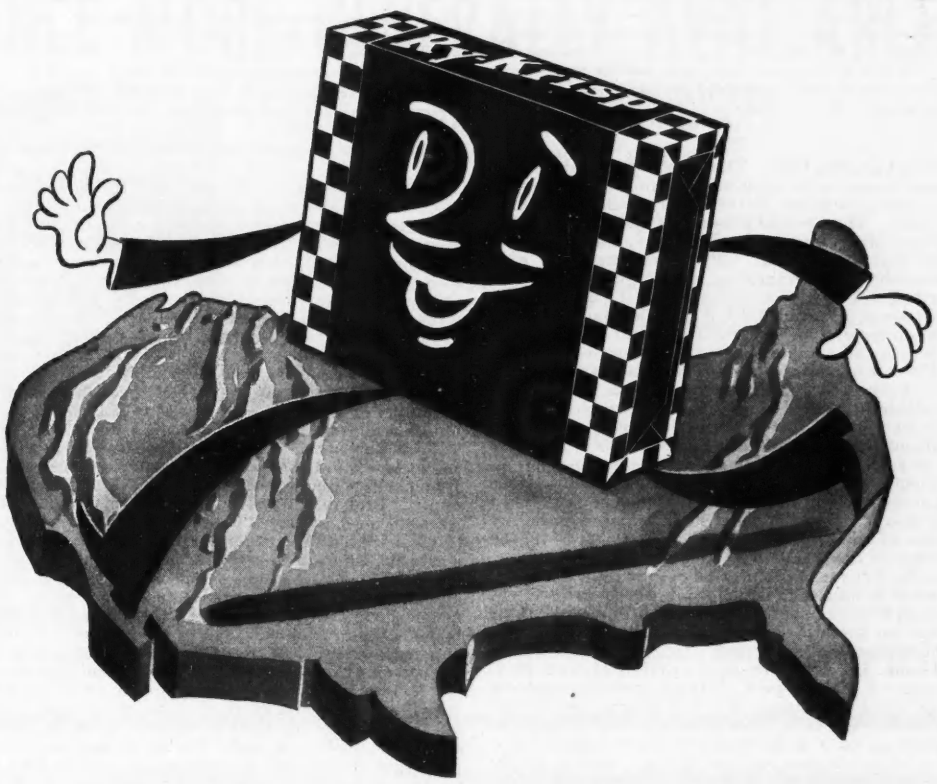
Vol. 157, February 1945

*The nature of some new dietary factors required by guinea pigs. D. W. Woolley and H. Sprince.—p. 447.

*Production of nicotinic acid deficiency with 3-acetylpyridine, the ketone analogue of nicotinic acid. D. W. Woolley.—p. 455.

*The vitamin B_6 group. III. The vitamin activity of pyridoxal and pyridoxamine for various organisms. E. E. Snell and A. N. Rannefeld.—p. 475.

*The vitamin B_6 group. IV. Evidence for the occurrence of pyridoxamine and pyridoxal in natural products. E. E. Snell.—p. 491.



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*Vitamin interrelationships. IV. Further studies on the influence of chronic thiamine deficiency on riboflavin metabolism. B. Sure.—p. 543.
Relative effects of casein and tryptophane on the healthy and xanthurenic acid excretion of pyridoxine-deficient mice. E. C. Miller and C. A. Baumann.—p. 551.
*Action of trypsin on native and denatured proteins. F. Haurowitz, M. Tunca, P. Schwerin and V. Göksu.—p. 621.
*Pyruvic acid. III. The level of pyruvic and lactic acids, and the lactic-pyruvic ratio, in the blood of human subjects. The effect of food, light muscular activity, and anoxia at high altitude. T. E. Friedemann, G. E. Haugen and T. C. Kmieciak.—p. 673.

Growth Factors for Guinea-Pigs. The dietary essential, GPF-2, previously demonstrated to be required by guinea-pigs, was replaceable by a mixture of cellulose and casein or cellulose, arginine, cystine, and glycine. The optimal amount of casein for growth of guinea-pigs fed a highly purified ration was found to be 30% of the diet. The dietary essential, GPF-1, was identified with folic acid, and the behavior of guinea-pigs on a folic acid-deficient ration was described. A highly purified diet for the assay of the unidentified nutritional essential, GPF-3, was developed. Some improvement in survival time of GPF-3-deficient animals was observed when biotin and *p*-aminobenzoic acid were fed. It was shown that GPF-3 was not precipitated by lead acetate, was not readily absorbed by norit, and that while it was insoluble in alcohol it was soluble in alcohol and HCl. It resembled strepogenin, an unidentified growth factor required by certain bacteria.

Nicotinic Acid and 3-Acetylpyridine. Typical signs of nicotinic acid deficiency as seen in susceptible species were caused by 3-acetylpyridine when 2 or more mg. per day were fed to mice. This species was not susceptible to nicotinic acid deficiency produced by usual dietary means. Signs of the disease were prevented by sufficient amounts of nicotinic acid or of nicotinamide in the ration. In contrast to the results with animals, 3-acetylpyridine was relatively ineffective for the inhibition of growth of microbial species, and in those instances in which inhibition of growth was produced it was not reversed specifically by nicotinic acid. This ineffectiveness against bacteria was not due to the ability of these organisms to inactivate the compound.

Vitamin B_6 Group. III. Pyridoxamine, pyridoxal, and pyridoxine were compared with respect to their growth-promoting activity for 17 different organisms. For one group, represented by some yeasts, molds, and rats, these compounds have approximately equal activities on a molar basis. For two yeasts, pyridoxamine and pyridoxal showed variable activity, which usually but not always was somewhat less than that of pyridoxine. For a large group of lactic acid bacteria the activity of pyridoxamine and pyridoxal varies from a few fold to several thousandfold that of pyridoxine; it is doubtful whether these organisms can utilize unchanged pyridoxine at all. Pyridoxal and pyridoxamine are labile compounds which readily undergo reaction with various constituents of the basal media when heated.

Vitamin B_6 Group. IV. It is concluded that pyridoxal and pyridoxamine occur naturally, that they constitute a considerable portion of the total vitamin B_6 present in many natural materials, and that the proportions in which the three compounds occur differ markedly with different materials. The presence of these compounds satisfactorily explains "pseudopyridoxine" activity. The data do not exclude the possibility that these substances may occur to some extent as constituent parts of more complex structures, nor are they sufficiently quantitative to exclude the possibility that other unknown substances may contribute a minor portion of the total vitamin B_6 activity of natural materials.

Vitamin Interrelationships. Chronic thiamin deficiency produces no noteworthy differences in riboflavin content of body tissues nor in riboflavin absorption compared with those found in control rats. There is poorer utilization of riboflavin in chronic thiamin deficiency than in control rats on isocaloric diets, receiving the same intake of riboflavin, but the poorer utilization is not so great as in acute B_1 deficiency.

Action of Trypsin on Proteins. While globular proteins such as ovalbumin or serum globulin are hydrolyzed by trypsin very slowly in their native state, fibrous proteins such as fibrinogen or myosin are hydrolyzed by trypsin at the same rate before and after denaturation. The susceptibility of native fibrous proteins to the attack of trypsin is attributed to the expanded configuration of their peptide chains, which renders their peptide bonds accessible to the enzyme. The digestibility of raw protein food (meat, eggs, milk) by trypsin is not superior to that of boiled food.

Pyruvic Acid. The concentration of pyruvic acid in the blood of resting subjects is relatively little affected by light physical exertion, by long rest in bed, or by short exposures to simulated altitudes up to 15,000 ft. Anoxia at altitudes greater than 18,000 feet depresses the oxidative processes in other tissues throughout the body to such an extent that the rate of metabolism of pyruvic acid no longer keeps pace with the breakdown of sugar, in consequence of which the energy needs cannot be met by oxidation.

JOURNAL OF HOME ECONOMICS

Vol. 37, April 1945

*What education for home economists? L. Walsh, M. N. Devoy, J. A. Fogarty, E. N. Todhunter, H. Hatcher, M. A. Ewing, E. L. Phelps and G. Henderson.—p. 201.
*Emphases in current food research. S. Woodruff.—p. 210.
*Changing eating habits. L. W. Harper.—p. 216.
*Vegetables as a source of spoilage bacteria in home canning. C. Dubord and W. B. Esselen, Jr.—p. 221.
*Food purchasing as affected by consumer education. H. Kory.—p. 225.

Home Economics. "We must change our methods of teaching nutrition and also make some changes in subject matter or at least in the relative emphasis on certain subject matter phases. Home economists themselves must be more fully aware of the multiple ways in which nutrition affects individuals and society as a whole; they must take part in over-all planning for education of all college students. They should take the lead in bringing together representatives of the various sciences, sociologists, economists, physical education teachers, and other specialists who could together plan and teach such a course. Nutritionists must be able and willing to fit their subject matter into a larger program planned and taught by a group of specialists, each of whom sees his subject matter not as material to be learned to the last detail but as a factor development of the student."

Food Research. "The boundary line between subject matter called foods and that identified as nutrition is an academic convenience less distinguishable than college course offerings would imply. Probably more man and woman power has gone into research on dehydrated foods than on any other product in the last 2 years." The author doubts that dehydrated vegetables are markedly inferior to fresh ones from retail stores. The ideal method of cooking would be one which gives a completely palatable product while causing no loss of food value. This ideal may never be wholly attained; with some foods palatability may have to be sacrificed for the sake of food value, or vice versa. Two papers have reopened an old question about cooking green vegetables with baking soda to preserve color and increase softness. To the reviewer it still seems dangerous to advocate using soda until the effects of careless measuring are understood. The search goes on for objective methods of measuring the various factors that constitute quality in food. No means has been found yet of dispensing with tasting, but mechanical devices help to verify subjective judgment. Wartime needs for palatable protein foods of non-animal origin threatened to be even greater than has thus far proved to be the case. Present knowledge of the distribution of essential amino acids in plant proteins favors larger use of several scarcely known foods.

Eating Habits at School Lunch. The school hot lunch program can be so utilized as to bring about in the individual pupil changes in eating habits which will definitely improve his nutritional status. These changes in eating habits and in food preparation practices are sometimes striking, especially among pupils from cultural groups with definite food patterns which are far below any accepted nutritional standard. Children naturally talk of the school lunch and carry home nutrition information. Parents discuss the program together. Marked improvement in the eating habits and health of a child often is an inducement to adults to improve their own.

Food Spoilage. An investigation of the bacterial load on fresh vegetables indicates that potential home-canning spoilage bacteria such as spore-forming anaerobes and thermophiles are present in relatively small numbers except in occasional samples and that their number varies widely. Washing and blanching prior to canning effectively reduce the bacterial content of vegetables. The incidence of putrefactive anaerobes encountered was very low and may account for the fact that in some sections of the country the boiling water bath method of processing has been used successfully by many people. However, because of the wide variation in the bacterial content of the soil and of vegetables grown in it, heat-resistant bacteria may be present at any time as a potential cause of spoilage unless process times which ensure their destruction are used.

Food Purchasing. The teacher or the nutritionist may evoke interest in new foods through study of foods of different nations. It is important that she know the religious, national, community, and family customs of each group with which she is working. While much of the food people eat is eaten out of habit, interesting methods of preparation may bring important changes in food habits. People tend to eat what they enjoy eating and this enjoyment can be enhanced by ingenuity and skill in preparation and service. The approach used in introducing new foods or familiar foods in new dress determines in large degree the reception of those foods. Food tastes may be broadened also by making eating a social event.

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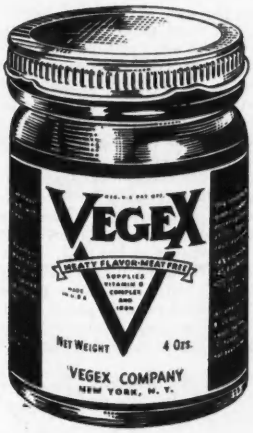

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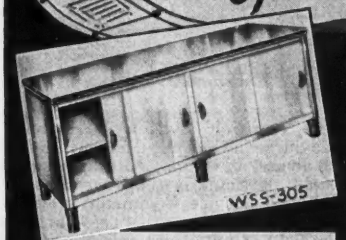

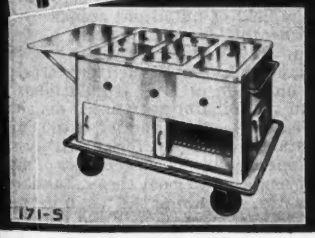

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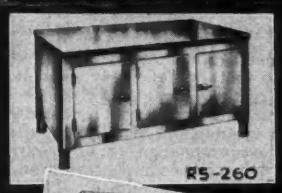

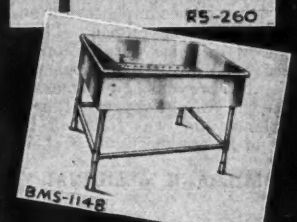

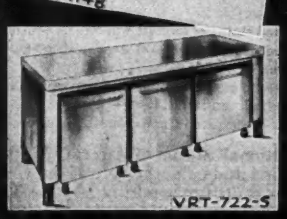

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JOURNAL OF SCHOOL HEALTH

Vol. 15, March 1945

*Six student dietitians experiment in school nutrition. E. Stewart.—p. 58.

Student Dietitians and School Nutrition Program. Plans were worked out by the Division of School Hygiene and the Director of Dietetics of Good Samaritan Hospital, Portland, Oregon, to carry out a functioning nutrition program in Sitton School, located in the ship-building area where 1500 families live in temporary government housing projects and in trailer camps covering 4 square miles. A questionnaire that would reveal food habits of the children was drawn up, circulated, and the results were studied by a student dietitian and the Health and Nutrition Committee at the school. Breakfast summaries indicated: that 16% of the children ate no breakfast; 30% included "soft drinks"; 60% ate no fruit. The luncheon summaries indicated that 72% showed a definite preference for starches. About 8% of the children ate supper as late as 8 or 9 at night. In addition, the survey showed that a very young sister or the child himself was responsible for the preparation of the meal.

A continuous nutrition program was arranged by sending successively a student dietitian for 2 weeks over a period of 12 weeks. She started the day in conference with the staff dietitian at the hospital, and in conference at school talked daily with either the principal or the teacher chairman of the Health and Nutrition Committee. Service to the school by student dietitians included: a new floor plan for the kitchen; drawings for a pastry cooling rack, soiled dish table, wooden trays, suggestions concerning use of colorful food posters on the walls and placing separate tables to form a pattern, rather than in long rows. The art department helped prepare an illustrated letter to parents asking that the child be given 20 cents for the hot plate luncheon. This effort, with a little urging by the teacher and student dietitian, brought the number of lunches sold from 6 to 75. It was decided to discontinue serving pie and cake, substituting a simple dessert of pudding, fruit, or ice cream, selling for an additional 5 cents. At the suggestion of the student dietitians, the variety in food items on the snack luncheon was reduced to milk or soup, raw fruit or juice, and sandwich. One student dietitian accumulated suitable menus with priced recipes (prices being obtained from local stores) a simple cost accounting system, and forms for perpetual and physical inventory. Another student helped with work schedules for kitchen employees. Another gave introductory nutrition talks in all rooms, laying a groundwork for subsequent talks by the room teachers. Students also accompanied the school nurse into the homes and talked with parents on nutritional problems concerning their children, or to the children while visiting the schoolrooms. Marked improvement in health and physical growth was revealed through periodic health examinations and the cumulative health record cards of the pupils. Teachers report less fatigue. Interest in school has been increased and general morale improved. Patronage in the cafeteria has steadily increased.

MEDICAL CLINICS OF NORTH AMERICA

Vol. 29, March 1945

*The modern treatment of cirrhosis of the liver. W. H. Barker.—p. 273.

Cirrhosis. An abundance of experimental and clinical evidence points to dietary deficiency as a most important factor in the etiology of fatty liver and cirrhosis of the liver. Treatment of fatty liver and cirrhosis by a nutritious diet high in calories, protein and vitamins, especially the vitamin B complex, appears to be the most promising form of therapy for this disease, even after signs of hepatic decompensation such as jaundice, ascites, and hematemesis have developed. The dietary treatment of cirrhosis is discussed in some detail along with adjunctive therapeutic measures including various surgical procedures designed to relieve ascites and to prevent hematemesis. Four cases are presented to illustrate the various aspects of dietary therapy. In one of these cases splenectomy was followed by dramatic relief from both ascites and hematemesis.

MILBANK MEMORIAL FUND QUARTERLY

Vol. 23, April 1945

*Nutritional status of aircraft workers in Southern California. III. Effects of vitamin supplementation on absenteeism, turnover, and personnel ratings. H. Borsook.—p. 113.

*The war-time nutrition program for workers in the United States and Canada. R. S. Goodhart and L. B. Pett.—p. 161.

*Length of life of parents and offspring in a rural community. S. Preas.—p. 180.

Nutritional Status of Aircraft Workers. In this investigation, 6 vitamins and calcium were given to one group and placebos to a control group for a period of 9 to 12 months. The groups had similar personnel ratings at the beginning of the study, nonmilitary terminations of employment were approximately equal in the first few months, and absenteeism did not differ significantly during the first 6 months. In the second 6 months, absenteeism from all causes was 19% less for employees receiving the vitamins than for those receiving the placebos; for the 12-month period, nonmilitary terminations were 27% fewer in the vitamin than in the placebo group; and personnel ratings at the end of the study were significantly higher on the average for the vitamin subjects than for placebo subjects. It is of interest that a difference in absenteeism occurred only in the second 6 months, a fact which suggests that a fairly long therapy period is needed before effects are manifested in performance. Furthermore, most of the reduction in absenteeism was in causes other than specific illness or diseases, and this, together with higher personnel ratings, seems to indicate that therapy resulted in an improved feeling of well-being or in what has been termed industrial morale. Diet histories included as a part of the final examination of subjects were taken and analyzed by the methods used by Wiehl for the diet histories taken at the beginning of the study. The data show that the quality of the diets of subjects in the placebo and vitamin groups was very similar in the winter of 1942–43. In both groups the distributions of diet according to qualitative ratings were essentially the same as for the total subjects in the winter of 1941–42 except for a slightly lower consumption of meat in the second period. The dietary histories indicate that the food habits of both groups remained essentially unchanged during the study year.

Nutrition Programs in U. S. and Canada. The nutritional welfare of workers in war industries has received special attention from the national governments, both in the United States and Canada. In addition to extensive diet education programs for workers, the government agencies have given much technical assistance in planning with management for adequate in-plant food service facilities and have furnished scientific advice on menus and methods of cooking for large numbers of persons. Both management and governments are expected to continue their interest in industrial feeding programs after the war. "Because of the small number of industrial feeding specialists (18) available for field work, it has been impossible for most of them to do much more than respond to requests for assistance on specific problems arising in the installation or operations of food services. Continued and recurring assistance and guidance in the development of educational programs of necessity have failed to receive as much attention as they merit. To some extent this deficiency has been offset by the educational materials prepared in Washington for distribution to management, labor, dietitians, physicians, and food service operators throughout the country."

Length of Life of Parents and Offspring. Various studies have been made which indicate that the length of life of offspring is related to that of their parents. In an investigation of a relatively homogeneous rural population, the offspring of long-lived parents were found to have an advantage over those of short-lived parents with respect to the age at which death occurred. Interesting differences in causes of death were found between the offspring of the long-lived and the short-lived parents and also between the two groups of parents.

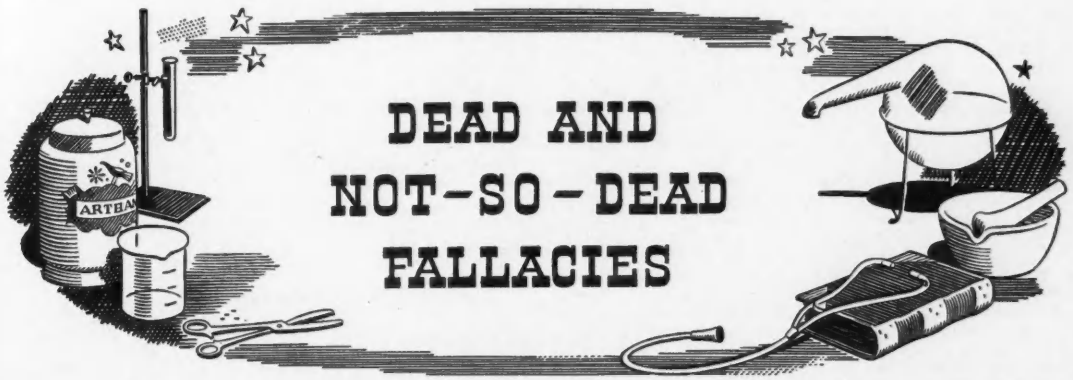
MILITARY SURGEON

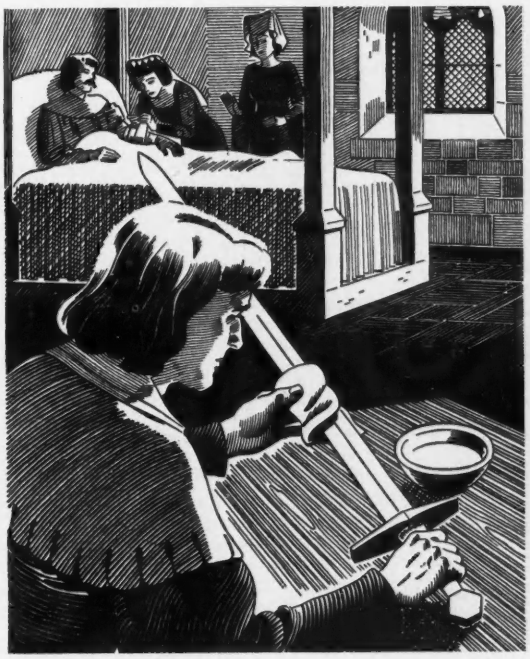
April 1945

*Nutrition in the Army, A. J. Dyer.—p. 342.

Nutrition in the Army. The Nutrition Division of Preventive Medicine Service, Office of the Surgeon General, deals principally with problems concerning the dietary of troops; maintains liaison with other agencies in this field, particularly the Quartermaster Corps, Army Medical School, and Service Commands; reviews reports of the activities of nutrition officers; gathers reviews, and analyzes research data in the field of nutrition; assists in Army ration trials; directs experimental laboratory work; and many other duties not enumerated. In coordination with Civil Public Health Division, the Civilian Nutrition Branch prepares plans and advises regarding the nutrition of civil populations, their nutritional requirements and the relief of nutritional deficiencies and nutritional deficiency diseases. It is a function of the Surgeon General to prescribe basic standards of diet for the Army under the various conditions of its operation. The mechanics of making the master menu, which is formulated to meet these standards, is a function of the Quartermaster. Planning the menu is the first step; a master menu is sent to each camp, post, and station; the surgeon or his representative at a post, camp or station usually serves as a member of the menu board to assist primarily in making sure that the substitutions of food items, occasioned by desires of the troops and supply of available food, is satisfactory from a nutritional standpoint.

Even at the same camp there will be differences in nutritional requirements depending upon the activity of troops in training. Even within the same battalion, the nutritional status of troops will not be the same because of differences in the storage, cooking,





DURING THE LATE Middle Ages "weapon ointment" was used to help heal wounds. It was derived from blood, or eunuch's fat. The ointment was spread on the weapon only. The wound was washed and bandaged. The ointment on the weapon was supposed to speed healing.

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preparation, and serving of food. Medical Department officers are specifically charged with the duty of joining officers of the line in superintending the cooking done by the enlisted men. They give attention to storage and handling of food generally, and to care and preparation of food in the kitchen with a view of retaining maximum nutritive value. The Sanitary Report of all stations will comment on the extent to which food is properly prepared and served, and on the adequacy of the food consumed by the soldier. Nutrition officers in the Sanitary Corps, stationed in various posts, camps and stations in the Zone of Interior as well as in overseas theaters, have had excellent training in college and in civilian occupations and an intensive course at the Army Medical School. They are responsible to their respective surgeons for the nutritional aspects of food and feeding as they affect the health of troops. They must spend a maximum amount of time working with and assisting those who prepare food for consumption, conducting nutritional surveys, making nutritional analyses of foods served, as well as improving the food habits of troops.

Reports from various overseas theaters have indicated the existence of various nutritional problems. The Chief Surgeon of one area has suggested an over-all theater allotment on a basis of one nutrition officer for 25 to 30 thousand troops. He has emphasized the fact that nutrition supervision for task forces is of special importance. The higher the nutritional state of troops in the Zone of Interior the better they are able to withstand deprivations overseas. "We in the Nutrition Division, Preventive Medicine Service of the Surgeon General's Office, headed by Col. John B. Youmans, M.C., and the field Nutrition Officers, are firmly of the opinion that the best way to supply the necessary nutrients is through food properly chosen, prepared, and cooked rather than the buckshot formula of prescribing multivitamin capsules to everyone without first taking all measures available to supply it through food. Much valuable work is being done on this problem and more should follow."

REVISTA DE LA ASOCIACION ARGENTINA DE DIETOLOGIA (BUENOS AIRES)

Vol. 2, October, November and December 1944

*The protein requirement of gouty persons, and the purine-free diet. P. Escudero and R. D. López.—p. 264.

*Influence of normal and fat-free diets on the excretion of lipids. J. E. Solá.—p. 267.

Importance of enteric infection in the etiology of acute diarrheal conditions of infancy. C. P. Montagna and A. A. Rimoldi.—p. 277.

*Microbiological study of some samples of dehydrated eggs. S. Soriano and A. M. de Soriano.—p. 298.

*Nicotinic acid and riboflavin in beef extracts and corned beef. R. G. Booth and E. C. B. Wright.—p. 307.

Protein Requirement and Purine-Free Diet. A gouty patient successfully treated with a low-purine diet of 2800 calories, with 13% protein (1.4 gm. per kilogram body weight) after two years on this diet was found to be suffering from a mild protein deficiency. It is believed that the usual low-purine diet should be higher in protein; 1.8 to 2 gm. protein per kilogram body weight is suggested as a protective figure.

Fat-Free Diets and Lipid Balance. Five healthy adults were kept on a normal balanced diet for 20 days, and then given a diet deprived of lipids, but otherwise normal. Lipid balance was studied in both cases, and the following conclusions were drawn: There is no relation between the quantity of lipids ingested and the weight of feces, the amount of dry extract, the quantity of lipids excreted. The quantity of lipids excreted is approximately the same in normal and lipid-free diets. With a normal diet, the amount of lipids excreted does not reach 5% of the quantity ingested. Excretion of lipids is independent of food taken. There is no relation between the quantity of lipids excreted and the amount of dry fecal extract. There is no relation between the weight of the total ration and the amount of dry fecal extract.

Dehydrated Eggs. In analyses of dehydrated eggs in powdered and flaked form the flaked eggs were found to have almost double the bacterial content of powdered eggs. The mold (*Aspergillus glaucus*) content was approximately 100 times greater in the flaked eggs. No yeasts, streptococci, absolute anaerobes or bacteria of the Salmonella group were present in the samples studied.

Nicotinic Acid and Riboflavin in Corned Beef. During the process of corning beef there is a loss of about four-fifths of the original nicotinic acid, and a slightly lower loss of the riboflavin content. Losses are due to evaporation, as there is no evidence of vitamin destruction in the methods used. Beef extracts are a good source of nicotinic acid and riboflavin.

AMERICAN COOKERY

Vol. 50, March 1945

*Feast on fish: when cooked in a restaurant. D. G. Volkert.—p. 26.

*Planning the institution kitchen. E. M. Risk.—p. 34.

*Watch the preparation! R. M. Laurance.—p. 36.

Flavor . . . it becomes of age (Part 1). S. H. Martin.—p. 40.

Fish Cookery. The restaurant industry has always tried to merchandise fish because of its low portion service cost and comparatively easy preparation, but not until the war has the public accepted certain items of fish in preference to poorer cuts of meat. As the preference ran toward baking or broiling as methods of cooking, rather than deep fat or pan frying, a chart is included which is used by kitchen staffs in primary preparation, also several quantity recipes.

Kitchen Plans. In order to plan a kitchen for large group feeding, one must estimate the maximum and minimum number of persons to be fed and decide upon the arrangement of the units. A study of the style of service and the type of food to be served will also help determine the size and plan of the kitchen. Space for the kitchen should be selected with proper heating, lighting, and ventilating facilities in mind, as well as adequate floor space for restrooms, lockers, and refrigeration. Actual equipping need not be elaborate, but the equipment must be good and selected with care in regard to size. A machine that is too small is apt to be overloaded, while a machine too large will result in a waste of labor. General specifications for dishwashing machines, cook's and baker's tables, and electric appliances are given.

Food Preparation. After planning a meal, the primary concern is its preparation and handling, up to the time it is served, with the least possible loss of nutritive value. In institutional food preparation, as well as home preparation, the plan to reduce this loss is based upon protection from heat, air, and water. Purchasing and storage in relation to exposure to these elements is first considered, stressing purchasing in the right quantities and of the best quality possible. Vegetables and fruits are divided according to their characteristics and the most satisfactory types of storage for them explained. In cooking, the preparation of small vegetables at frequent intervals produces the best results, as does cooking in as short a period as possible. Other suggestions are to leave the vegetables in as large pieces as is practical, to use as little water as possible, to start them in boiling, salted water, and to save the drained-off liquid for soups. Serving suggestions include putting the most perishable foods out on the counters just before the serving period and putting foods away as soon as possible. The basis of success in these methods of preparation and food conservation is complete employee cooperation.

AMERICAN RESTAURANT MAGAZINE

Vol. 29, March 1945

*How to keep meat on menus. J. A. Cline.—p. 32.

*They don't bring their lunches at Thompson Aircraft. W. B. Fiske.—p. 36.

*There's no appeal like the eye appeal of spring vegetables. L. D. Freeman.—p. 38.

Meat on Menus. Low temperature cooking is now even more important than formerly. Meat is more tender and juicier, and from 10 to 20% more servings may be obtained when cooked at low temperatures. The flavor of meat can be extended to other foods by the use of gravies and sauces from meat cooked by moist heat. Good meat extenders are stuffings and dressings, noodles, macaroni and spaghetti, fruit, vegetables, and eggs. With lower grades of meat, long, slow cooking in moisture is essential. Avoid overcooking, yet cook low-grade meats longer than top quality cuts.

Industrial Feeding. Over 85% of the Thompson Aircraft employees eat meals at the company cafeteria in three shifts. The cafeteria is within 1½ min. walking time from any part of the plant. The dining room carries no hint of industrial life. There is a large stage for entertainment purposes on the side of the room. At one end is a snack bar. Service arrangements for the counter are highly efficient. There are two service lines, one on either side of the oblong food service areas. (Since there are two service areas, there are four lines in all.) There is a cash register at the end of each line. Food is wheeled in from the kitchen, bakery, and storage room. Kitchen equipment includes 3 batteries of 3 electric ovens each, 2 batteries of 3 electric roast ovens. Also there are 6 modern gas ranges, 1 hot plate, 2 deep-fat fryers, 5 aluminum steam kettles, 3 batteries of 4 up-to-date pressure vegetable cookers, a potato peeler, a complete butcher-shop including a food chopper, a meat block, meat slicer and saw. Four electric coolers just off the kitchen provide storage space for dairy products, vegetables, meat, and garbage. Included in the equipment is a deep-freeze area. The dishwashing room is located directly off the cafeteria and includes an automatic dishwasher and a modern glass washer. The plant has its own bakery and bakes everything but bread and rolls. The efficiency is due not only to modern equipment and layout, but to expert management.

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For only 54¢ a gallon, V-C-B provides a palatable beverage approximating the true flavor, caloric value and Vitamin C potency of fresh orange juice . . . 1,000 International Units of Vitamin C and 50 calories to each 4-oz. liquid portion!

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Single 1 lb. 12 oz. cans	each	$ 1.40
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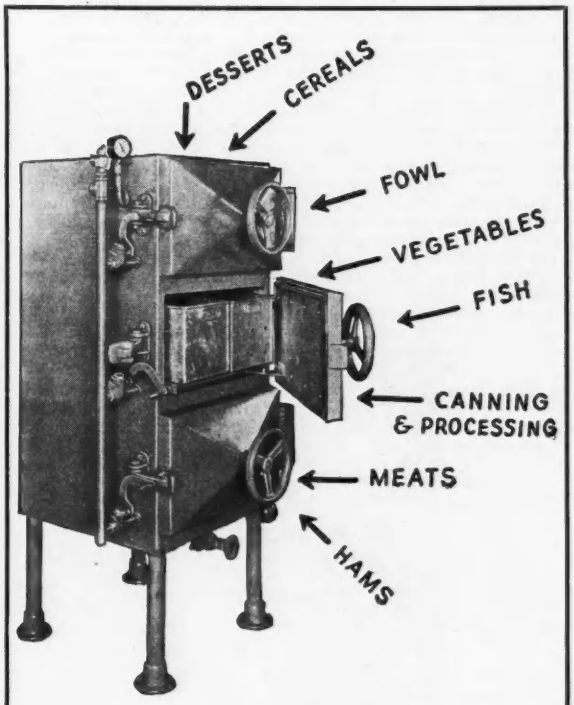

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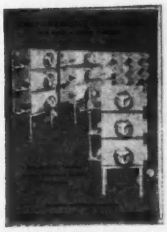

MARKET FORGE COMPANY
Everett Station *Boston 49, Mass.*

A manager, assistant manager, and food consultant form a nucleus guiding force. The executive chef has charge of all cooks and all hot food preparation. The steward is in charge of all purchasing and receiving. The entire personnel of the food service department consists of 215 persons exclusive of the plant cleaning department. Through special arrangements graduate student dietitians from the University Hospital of Western Reserve University spend several weeks at the plant, rotating in various phases of food service. The Thompson Aircraft food service is not intended to show a profit. Its goal is to provide the best possible food for the workers with the company making up any deficit. Their 40 to 50-cent luncheons would normally sell for 60 to 70 cents. The Victory Vitamin Luncheon special is a 1000-calorie balanced meal, priced at 45 cents, which was popularized by means of table tent cards—on one side the Victory Vitamin menu for the next day, on the other a brief lesson in nutrition.

Spring Vegetables. Restaurants should see that guests have an opportunity to get a hearty serving of 2 cooked vegetables each day—one green, leafy, or yellow vegetable; the other, a non-starchy one; also a crisp raw vegetable in some form. A little salad oil added when cooking will make the vegetables glisten. To preserve the full flavor of canned vegetables, drain off the liquor into a saucepan and boil down to half. Then add vegetables, heat, season, and serve. Taste before serving to make sure they are seasoned just right. A rich, creamy white sauce adds flavor to vegetables and can be varied by the addition of grated cheese, onion, curry powder, parsley, chives, mint and lemon juice, and the like. Vegetable sandwich fillings are appetizing in spring. Many interesting combinations of vegetables, salad suggestions, and sandwich fillings are included.

BAKER'S HELPER

Vol. 83, March 10, 1945

*"Bread enrichment should be continued."—p. 36.
*Seven causes of unsanitary conditions.—p. 41.
*Apple pie is king. W. E. Broeg.—p. 68.

Vol. 83, April 7, 1945

*To investigate food scandal. L. Sullivan.—p. 31.
*Must cut lend-lease. L. Sullivan.—p. 31.
*American bakers make use of abandoned German equipment.—p. 34.
Delicious cookie formulas using soy flour. J. A. Lambeth.—p. 52.
Some fresh frozen apricot pie leaders. W. E. Broeg.—p. 54.
*Niacin and niacinamide.—p. 47.
*British stocks a big secret. L. Sullivan.—p. 72.

Bread Enrichment. The continuance of the enrichment of all baker's white bread and rolls is not assured beyond the duration of the present emergency. A study by the National Research Council prior to the enrichment of flour and bread showed thiamin 0.8 mg. per 2500 calories (1.6 mg. recommended), riboflavin 1.4 mg. (2.2 mg. recommended) and niacin 11 mg. (15 mg. recommended). If the benefits of enriched bread are to continue, state as well as federal action must take place. South Carolina, Louisiana, Alabama, Texas, Mississippi, and Kentucky have already adopted legislation requiring the enrichment of all white bread and flour sold within their borders. Similar legislation is being considered in other states.

Unsanitary Conditions. The element of human behavior was given first among possible ways of introducing filth into foods, the rat second. Other causes were pet cats, stray dogs and young children, insects, polluted water, roaches, and dust.

Apple Pie. Bakers have accepted fresh frozen fruits because quality pies can be produced from them with the addition of little sugar. Americans are the world's greatest pie eaters and apple pie is their favorite. Several methods of making quality apple pies with frozen apples are given.

Food Scandal Investigation. Both the Senate and the House have begun investigation of the government's management of our vital food resources during wartime. The article lists causes of the present acute food shortages as the withdrawal of too much manpower from the farms, too much food going out on lend-lease, and hasty pricing policies by OPA.

Lend-Lease Cut? There is not enough food available to take care of all the present overseas demands on U. S. production. Our total food shipments under lend-lease were 736,035,529 lb. for February of this year, as compared with 597,600,000 lb. in January and 391,000,000 lb. in December. At this rate of increase on lend-lease which is over and above all military requirements, the U. S. civilians would soon be reduced to subsistence diets.

Abandoned German Equipment. Germans have been forced to retreat so rapidly in many sectors that they have left part of their portable bakery units to be captured by American forces who soon turn out 30,000 lb. of bread in a day. Questioning of German prisoners has resulted in much information about Nazi bakery units and their activities. The normal field bakery unit is made up of about 80 men and 2 officers and under emergency conditions can produce 10,000 loaves per day, but 7000 lb. is an average amount. Each loaf of German bread weighs just under 3 lb., with 1 loaf being a daily ration for 2 men. The American soldier receives about $\frac{2}{3}$ lb. bread per man per day. Of the flour used in making German bread, 80% is whole wheat and the rest *ersatz*, that is, sawdust, soybean, corn, or anything available to give the flour bulk. Bakery units are usually located 15 to 18 miles behind the front lines.

Restrictions on Vitamins Removed. All controls from the sale and distribution of niacin and niacinamide have been removed and a free market exists. They may be ordered in any quantity without restriction. This action by WPB follows the release of riboflavin, thiamin hydrochloride, and ascorbic acid from allocation controls, Vitamin A only remaining under allocation.

Food Stock Piles. Excessive food storage by WFA will soon be investigated as the result of a recent report which showed 12,858,339 lb. canned and dried products in government storage as of December 12, 1944, with all the food being from the 1941 crop. This means the food had been in the government's hands continuously for more than 3 years. The preliminary Congressional inquiry has disclosed that 400,000 cases of evaporated milk purchased in 1941, and still in government storage, is now "unfit for human consumption." Inadequate inventory methods in WFA were responsible for an error of 60,000 tons in the reported inventory of cheese and another error was found to cover 25,000,000 lb. dried milk. Information as to the amount of lend-lease foods in storage in England is not available, as the English government desires complete secrecy on this subject.

HOTEL MONTHLY

Vol. 53, February 1945

*Want improved dishwashing machines.—p. 17.

Vol. 53, April 1945

*Should hotel industry establish schools for cooks and bakers?—p. 33.

Dishwashing Machines. In answer to a survey question, "What piece of restaurant equipment would you like to see improved?" approximately 300 replies were received. The first 10 items listed for improvement and redesign were: dishwashing machines, which led by a wide margin, ranges, coffeemakers and urns, steam tables, equipment controls, pot and pan washers, fryers, ovens, oven thermostats and refrigerators.

Training Cooks and Bakers. The situation with regard to good hotel cooks is serious. We must start schools to train them or the quality of the food and the operating proficiency of the food departments of the hotels of the United States will present a really serious problem. The purpose of the article is to consider some of the possibilities of training good cooks in America, to stimulate thinking along such lines, and to encourage comments and suggestions from members of the hotel industry. The writer's experience in the Navy has convinced him that it would be possible, through a good trade school, to turn out a good hotel cook (not a chef) in 9 months of training. The writer's general knowledge of the hotel business has convinced him that the industry is faced with the necessity of doing something toward the problem of securing good hotel cooks. If it should be decided that a school, patterned somewhat after the one described in the article, should be ready for students within 6 months after the war is over, it is the writer's opinion that work on the project must be started at once.

ICE CREAM TRADE JOURNAL

Vol. 41, March 1945

*Research—hints on quality in ice cream making. B. I. Masurovsky.—p. 50.

Quality in Ice Cream. The manufacture of quality ice cream requires that the construction of the plant be such as to facilitate the constant maintenance of cleanliness. Do not depend upon pasteurization to correct the moldiness of a product for while it may destroy the function of the mold, the musty taste and foreign flavor will remain. Proper handling of ingredients prior to use and during their utilization as ice cream ingredients helps in controlling the quality of the finished product. Do not keep fruits and fruit juices too long in storage for enzymic action goes on even at cold storage temperatures and as a result, the strawberry or raspberry may develop an oxidized flavor which is imparted to the ice cream products.

NATION'S SCHOOLS

Vol. 35, April 1945

*How to plan an exhibit. P. C. Baker.—p. 56.

An Exhibit. In order to plan an exhibit, a clear understanding must be had of the people to whom the exhibit will be presented—background, age, interest, and habits. A motive is a necessity.

BUY WAR BONDS AND STAMPS

What's wrong with America's health?

Doctors, editors, congressmen and many a thoughtful citizen are deeply concerned by the same stark fact: *40% of America's young men are unfit for military service.*★

This doesn't make us a nation of weaklings. Ask our enemies! And it's no reflection on the men themselves. Most of them are serving in other ways. *But it does show America's health is far below what it should be.*

Three chief remedies have been suggested—preventive medicine, physical training, and diet. The last is often overlooked. But it has been officially estimated that *about ⅓ of all Selective Service rejections are caused directly or indirectly by nutritional deficiencies*—lack of food or improper food.

That's one big reason for the government's food education program. It's one reason why schools and factories regularly serve milk to their students and workers. For milk is nature's most nearly perfect food. Surgeon-General Parran recommends "a pint a day for adults, a quart for children."

At National Dairy, we are doing our best to protect and improve the quality of milk and its many products—while our laboratories develop milk in other new forms that will benefit everybody.

Dedicated to the wider use and better understanding of dairy products as human food . . . as a base for the development of new products and materials . . . as a source of health and enduring progress on the farms and in the towns and cities of America.

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NATIONAL DAIRY PRODUCTS CORPORATION

AND AFFILIATED COMPANIES

★*Report of Senate Subcommittee on Wartime Health and Education, January 2, 1945.*

All information to be included should be written down. Certain parts can then be selected and put into brief slogans or statements. No individual legend should contain more than 20 words. The selection of pictures and other objects is the next step. The color scheme will have to be decided upon, then the lettering blocked out. A scale drawing should be done to provide a chance to experiment with size, lettering, proportions, and positions of objects. It is wise before constructing the exhibit to present the plans to co-workers or others who can point out ways of improving it.

PERSONNEL JOURNAL

Vol. 23, March 1945

Personnel problems after victory. F. H. Kirkpatrick.—p. 340.
*What is a grievance? S. Hoslett.—p. 356.

Grievances. Many organizations strictly differentiate between "personal" and "on-the-job" problems and the responsibility of counselors regarding each. Under this policy, the counselor is expected to give information on such matters as housing, transportation, and rationing, and also render a certain amount of assistance regarding personal problems originating outside the plant, referring the most difficult cases to outside agencies. The solution of problems "directly connected with the job" is deemed a distinctly supervisory responsibility. It is often difficult to classify the grievances, as many conflicting factors are involved. The desired objective is always to get the employee to work out his own problem, to think independently and objectively about his difficulties, and to lead him toward self-confidence and self-guidance. It is most effective for the counselor to talk to the employee about the grievance or problem, discuss it later with the supervisor if necessary, and refer the employee to the supervisor for a decision only if required.

RESTAURANT MANAGEMENT

Vol. 56, March 1945

*Adapting assembly line methods to an industrial cafeteria. J. H. Cheek.—p. 25.
*Storing, thawing, and cooking frozen foods for maximum flavor and nourishment. A. Easton.—p. 29.
*A guide to the preparation of low-point specialty cuts. L. P. DeGouy.—p. 40.
*Cellulose sponges.—p. 43.
*An assembly table.—p. 43.
*Drinkwater, Inc.—p. 43.

Industrial Cafeteria. The Boeing Aircraft Company has instituted "assembly line" food service in its Seattle plant by making use of every available mechanical device and introducing some new ones. Lack of space on the factory site made it necessary to set up the food operation on a two-building basis. Hot food preparation is concentrated in the cafeteria where over 20,000 meals are prepared daily. A complete new building was erected for the southern food service area, which is more than half a mile from the cafeteria and where the mobile hot food cart and cold food snack bars are supplied. Hydraulic lifts were installed so that the loaded carts could be rolled on and off the motor trucks which transported them from the main cafeteria kitchen. Gravity conveyors at the south building take the hot food containers directly to the point where the mobile units are stopped. Each conveyor which is used for one type of food only holds enough containers to service all the units. The insulated hot food containers and coffee urns for in-plant service were designed with easily closed tops dispensing with the need for gaskets which might spoil the flavor of the food. As the used containers are unloaded from returning mobile units, they are placed on a conveyor which carries them through a specially designed container washer which washes, rinses, sterilizes, and dries them. After leaving the washer, they are carried to a central point by conveyor where the coffee urns are routed underneath three 150-gal. coffeemakers. The food containers are switched onto an adjoining conveyor which carries them to the container racks for return to the cafeteria kitchen. The coffeemakers have a mono-rail above to raise and lower the filled coffee bags, and the boiling water for the coffee is poured and repoured by an electric pump. Bottom valves are used on the big urns for filling the portable containers, thus doing away with side faucets which might get in the way, and eliminating the use of rubber hose that might spoil the flavor of the coffee. An overhead mono-rail was installed to carry fresh meat directly from the receiving platform to the refrigerator in the cafeteria building. Sides of beef, pork, and lamb can be hung in the center of this large refrigerator, thus providing good circulation of air. The vegetable and fruit storage refrigerator has a direct entrance from the receiving platform. The refrigerator for the salad preparation division is set out from the wall, so that there is free entrance on three sides. In order to use inexperienced help, many of whom are quite old and some physically handicapped, operations were designed so that there would be a minimum of lifting. Conveyors carry the dishracks through all the processes in the dish and glass-washing section. Hot air at 180°F. is utilized here for drying so that by the time the racks reach the end of the conveyor they are again ready for use. Drip pans are set low enough under the conveyors so that they are easily cleaned by a stream of water which is drawn off through sewer drains at each end. The pie-making machine, capable of producing 350 pies per hour, is made more efficient by the use of pie-plate washing and sterilizing machines. A wall curtain extending down several feet from the ceiling on the dining-room side of the serving stations was built to shut off kitchen noises and odors. In designing the 8 serving stations at the cafeteria counter, a U-shaped rather than the usual straight line was used since those already served tend to go to the right and away from the bussing lines which run straight from the dish receiving stations near the exits back into the dishwashing sections. About 10,200 meals are served in the cafeteria daily. Both electricity and steam are used for cooking, and the ranges, roasting ovens, and French fryers are the largest now obtainable. The steam equipment includes a battery of kettles of 60, 80, and 100-gal. capacity, plus tiers of compartment steam cookers. The mobile hot food carts used in the south building are set up to serve one complete meal which consists of an entrée, one vegetable, a salad, a dessert, and a beverage. A sign listing the choices is posted on the serving end of the cart. The cold food carts or snack bars serve sandwiches, salads, pie and cake. Coffee is served from portable urns which are set up on stands several feet away from the mobile units to avoid interference with traffic. About ten per minute are served from the mobile units. The loaded food units are towed by tractors to the factory area in trains of 5 each. Two motor scooters with large carrying compartments accompany them and are used for replenishing. The entire food service operation is set up on a nonprofit basis.

Cooked Frozen Foods. Several well-known food companies are now making preparations to sell frozen cooked foods in institution-sized packages after the war. Items being considered are beef stew, corned beef hash, Hungarian goulash, chow mein, meat pies, chicken à la king, lobster Newburg, spaghetti and meat balls, soups, sauces, breads, cakes, and pies. Soups may be frozen in tin cans or paper containers. All fat must be removed before they are frozen unless they are to be consumed within a short time. Pies may be frozen before or after baking, but before baking is preferred. This way the lower crust and filling are put on a paper, tin or plastic pie plate, the pie is covered with pastry as usual and then frozen. As the pies are needed, they are taken from the freezer, thawed, and then baked the required length of time. Frozen pies may be baked before being defrosted by keeping them in the oven about one and one half times the usual period. Soft fillings such as custard and cream do not freeze as well as berry pies. Any kind of cake may be frozen, but those having a fine texture produce the best results. Cakes should be frozen immediately after baking and layers will remain fresh for months, requiring only defrosting before use. Baking powder biscuits baked, cooked, packaged, and frozen will remain fresh from 6 to 8 months and require only heating in the oven when ready to use. Rolls, muffins, and breads of all kinds may be quick-frozen and held until needed. Cooked foods to be frozen must be kept on the underdone side to allow for cooking during the reheating period. The size of the package is important, as it should be small enough for quick heating in order to prevent overcooking. In freezing mixtures, it is necessary to know how each separate ingredient will react alone and in combination. Foods having considerable liquid should have some kind of stabilizer such as starch or pectin L M added to prevent separation. Advantages of using frozen foods are that the flavor is sealed in fruits and vegetables and held without change since they are cleaned, packed, and frozen either right on the premises or within a few hours of the time they are picked; foods once considered seasonal may now be served throughout the year; convenience and compactness make for conservation of space; quality is uniform; time is saved in meal preparation; labor cost is cut; a greater variety of food may be served in institutions having limited cooking facilities and food production can be carried on during slow periods for later consumption.

Specialty Cuts. Twenty-three retail lamb cuts are listed in this article, characteristics given, and the recommended method of cooking listed. Representative recipes for the various cuts are also included.

Cellulose Sponges. These sponges which range in size and texture to meet the cleaning needs of hotels, restaurants, and hospitals from wiping photo and x-ray negatives to heavy duty cleaning will soon be available through the manufacturer, E. I. du Pont de Nemours and Company. A small size is especially designed for dishwashing and kitchen use and a larger size for washing walls and windows. The sponges are also being converted into wall and floor mops.

Assembly Table. An assembly table, 8 by 3 ft., which can be

"Gosh, what a marvelous morning!"

O-o-o-o! Your patients can begin to be happy right now!

For when the doctor says the word, breakfast trays can be gala ... something really special ... with sunny, golden Nabisco Shredded Wheat to start the morning bright — and right!

Here's a glowing bowlful of summertime-goodness! Delicious, fresh-from-the-wheat-field flavor! Tender-baked, yet crunchy! Honest, wholesome nourishment that patients on "general diet" like!

Breakfast-time! Supper-time! You'll find any time's a fine time for serving this naturally nutritious Nabisco Shredded Wheat — the original Niagara Falls product!

Delicious, ready to serve....

yet as nourishing as a hot cereal

ANOTHER DELICIOUS PRODUCT BAKED BY NABISCO

NATIONAL BISCUIT COMPANY

made any length, width, or height, has been developed by the Unistrut Corporation. It can be used as a cafeteria or work table, for assembly work or for other purposes. The legs are adjustable to an uneven floor and the 8 seats can be set at any height in pairs. The seats can be swung under the table when not in use. The table is shipped knocked down and is ready for quick and easy assembly.

Rat-Proof Storage. Drinkwater, Inc. offer a portable rat-proof storage room for the temporary storage of foods, linens, luggage, or dishes. The rooms, which are constructed of interlocking wooden frames covered with heavy galvanized screening, may be easily assembled without tools or nails. A room 6 ft. square can be uncrated and completely installed in 30 min.

WHAT'S NEW IN HOME ECONOMICS

Vol. 9, March 1945

*Home canning news. E. S. McKee.—p. 34.
*Foods and nutrition. D. E. Shank.—p. 41.
*What's new in lunchroom management. W. S. Pendergast.—p. 121.
Selecting protein foods in wartime. E. N. Todhunter.—p. 132.

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*Gardening and canning for school lunches. M. M. Morris.—p. 70.
*Essential records in an autonomous school lunchroom. M. P. Rogers.—p. 73.
*Here, there, and everywhere. W. S. Pendergast.—p. 74.
*Spar cooks and bakers school. B. R. Taul.—p. 109.

Canning Table for Meats and Poultry. Includes in tabular form excellent summary of directions for hot packing and raw packing of beef, pork, sausage, soup stock and poultry. As a result of studies on home canning of meats in general conducted by BHNHE, certain mixtures of meat such as hash, stews, liver pastes, scrapple, or combination of meat and vegetables, as in soups, previously included in published timetables, are now on the "What Not To Can" list. Instead of canning such mixtures it is suggested that each item be canned separately, and combined, if desired, at time of serving.

Miscellany of Food Facts. In refusing to approve the suggested enrichment of macaroni, spaghetti and noodles with vitamins, minerals, wheat germ, carotene or yeast, according to Definitions and Standards of Identity, the Food and Drug Administration is moved by the following: that consumers are likely to be misled concerning the quantity of nutrients present in the cooked product, since most pastes are cooked in large quantities of water which is discarded; that the per capita consumption of such pastes is but 5 lb. a year and therefore the enrichment would not materially improve the nutrition of the population; and that the addition of carotene may give the impression that because of the color, the pastes contain eggs.

A chart of commonly used spices presents their classification as roots, buds, or flowers, fruits, barks, or seeds of vegetable substances with characteristic pungent qualities, and also includes data on available flavoring extracts, and herbs from the garden or grocer's shelf.

Lunchroom Management. Offers plan for a breakdown of cafeteria expenses on the basis of a 15-cent lunch check. Distribution of the income dollar is listed as: food 60%; wages and salaries 32%; miscellaneous 6%; and reserve 2%. Replies to queries on various lunchroom problems are included, and quantity recipes for muffins, nut bread, and quick breads. In addition to making the counter more appealing, these breads can be used on the dessert counter as a fill-in when sugar is scarce. Due to the present high point rating on canned vegetables which allows but 0.7 point per meal, with a No. 10 can of tomatoes figured at 100 points, the school lunch problem is further intensified. Various plans are offered but the final suggestion is that each manager take the problem to the local OPA.

Food for School Lunches. Experience has shown that schools with stores of preserved foods are more likely to have better all-round programs. The very fact that canned food is available means that menus must be planned to vary the use of the food. Better lunches result if both vegetables and fruit are included. If the school has to depend on purchasing these foods throughout the year, the chances are it will not have sufficient funds to secure enough of them, particularly if the charge to children is to be kept reasonably low. There is no question but that a supply of community-preserved food helps to spread the ration allotment. (Last year's OPA regulation, which calls for no more than a 10 per cent deduction of the total points for any one kind of home-canned food even though more than 10 per cent is used, still holds.) In addition to more nutritious food for school lunches, some intangible values result, such as better understanding and appreciation of the whole school lunch program and impressing upon adults and children the interrelationship of the production of food and the nutrition of people. A community with well-organized facilities and a roster of helpers for food preservation can, upon short notice, avail itself of government-purchased foods and thus enrich the meals for the coming school year.

School Lunchroom Records. Second of a series of four articles dealing with the records necessary in efficient school lunchroom management. This presents the system of keeping records in individually operated city school cafeterias. Financial records would include a daily food cost sheet, monthly profit and loss statement, perpetual inventory, daily cash report, daily counter report, petty cash vouchers, weekly labor cost. Personnel records include employment records giving name, address, telephone number and a few facts about the individual, and a work schedule for each employee. Some forms for the requisitioning of supplies by each department are needed, indicating, for example, the number of cans needed, the size can, and the number returned at the end of the day. From these sheets daily food costs can be figured and the number of ration points used daily estimated. Purchase orders made out in duplicate or triplicate entail a good deal of work and probably are not worth the effort. A list of purchases can more easily be kept in a notebook with quotation prices indicated and the name of the firm from which purchased. Menu records show quantities prepared, amounts left over, weather conditions, and special school activities, which affect the amount of food sold. As for tax deductions and reports to the Federal Government, a manager must have assistance with this.

Hints to School Lunchroom Managers. Managers of school lunch programs who have not already adjusted their dessert counters to a long sugar shortage should take their menus in hand. Let homemade cake with frosting be a once-a-week treat. Use gingerbread, apple or frosted-fruit cobbler, or sweet rolls warm from the oven as a very acceptable substitute for cake. Sweetened, flavored gelatin can be extended with unrationed plain gelatin. With each 26-oz. can of flavored gelatin, use three fourths cup granulated gelatin and 2 gal. water and fruit juice for a very satisfactory product. Part of the cold water should be used to hydrate the granulated gelatin. The small items of Army equipment now becoming available for purchase through the U. S. Treasury Department, Procurement Division, Region No. 5, S. La Salle Street, Chicago, such as roasting pans, baking sheets, and the like, would be a good buy. Read the descriptions carefully and see the items, if possible. Some of the "Victory Models" make one hope victory will come soon. The Army steamers were particularly disappointing. A bulletin published by the Florida State Department of Education at Tallahassee devoted its December 1944 issue to the school lunch program and has some excellent suggestions about layout and equipment.

Spar Cooks and Bakers School. Spars are selected for Cooks and Bakers School after 6 weeks of regular boot training. There are two groups: cooks and bakers, and commissary stewards. The former seldom have had previous foods training or experience. They are graduated with the rate of Ship's Cook 3/c. The second group, those who will become commissary stewards, are women with college home economics training, usually a degree in institutional management. This group is given instruction in management and supervision of a Coast Guard mess in addition to the regular cooks and bakers course. They are graduated with a rate of Ship's Cook 2/c and are then sent out to Spar messes to understudy the Coast Guard commissary steward before taking over complete charge of the galley. The Ward Room (officer's dining room) galley at the Palm Beach Training Station is the Cooks and Bakers School laboratory. The trainees produce full meals that satisfy even the exacting standards of the Spar and Coast Guard officers who dine regularly in the Ward Room. The meals are planned, the food purchased and work plans and recipes supplied by the Commissary steward trainees who also supervise food preparation by the cooks and bakers. The general plan of the cooks and bakers course, 12 weeks in length, and that of the commissary steward trainees, are included in the article.

★★★★★

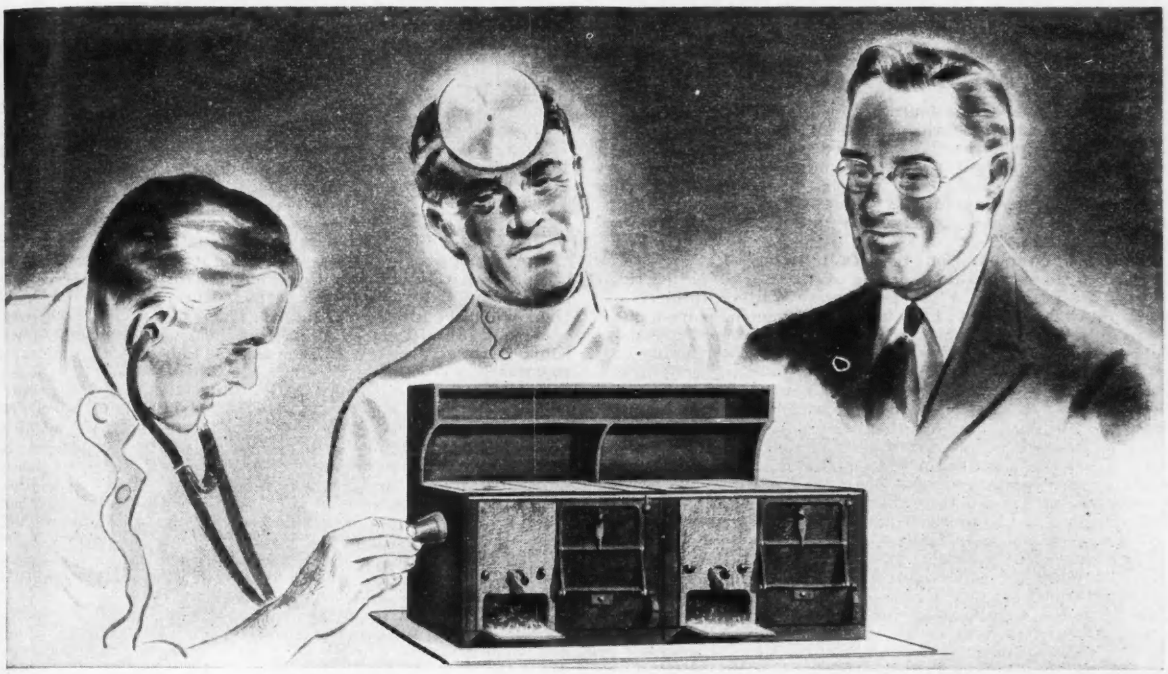
THE SEVENTH WAR LOAN

The following special message to the American people was signed by the seven five-star admirals and generals: G. C. Marshall, William D. Leahy, Douglas MacArthur, E. J. King, Dwight D. Eisenhower, C. W. Nimitz, and H. H. Arnold:

"Your sons, husbands and brothers who are standing today upon the battlefronts are fighting for more than victory in war. They are fighting for a new world of freedom and peace.

"We upon whom has been placed the responsibility of leading the American forces, appeal to you with all possible earnestness to invest in War Bonds to the fullest extent of your capacity.

"Give us not only the needed implements of war, but the assurance and backing of a united people so necessary to hasten the victory and speed the return of your fighting men."



Does your hospital kitchen need a "Consultation"?

IN diagnosing hospital needs, modernization is a "must" for your operating room and laboratory. This should be equally true of the hospital kitchen. Only the finest quality equipment can give satisfactory day-after-day preparation of nourishing, appetizing food. That dependable quality is found in Hotpoint-Edison electric cooking equipment. From every standpoint, it means more efficient hot food service in your hospital.

● ● Installation of Hotpoint-Edison electric equipment resulted, when "consultations" on the kitchens were held in these modern hospitals:

William Roche Memorial TB Hospital
Toledo, Ohio

Eastern State Hospital
Knoxville, Tenn.

Glenbrook Hospital, Detroit, Mich.

Edward J. Meyer Memorial Hospital
Buffalo, New York

These Features Helped Decide for Hotpoint-Edison

It is economical *because only one source of energy is necessary for light, power and cooking.*

It is comfortable *because it creates less kitchen heat for air conditioning system to remove.*

It is convenient *since equipment can be placed in kitchen to best advantage as there are no vents, valves or pipes.*

It is clean *as there is no smoke or soot.*

It is safe . . . *cuts down fire hazard because there is no flame or inflammable fuel.*

● ● ● *If your present equipment is inadequate or beyond repair, write Hotpoint or consult your local distributor. New government regulations now permit manufacture of a limited quantity of equipment for essential civilian use.*

Edison General Electric Appliance Co., Inc.
5692 West Taylor Street, Chicago 44, Illinois

Custom-Top Electric Range R-171
Hi-Speed Calrod, cast-in round units, two sizes of Automatic Griddles. Connected load 21-KW. 32-in. high, 36-in. wide, 38-in. deep.

Hotpoint Dependability Assured by 40 Years Experience!

HOTPOINT REGIONAL SALES OFFICES. EASTERN: 570 Lexington Avenue, New York City 22, Plaza 3-9333. SOUTHERN: 304 Red Rock Building, Atlanta 3, Walnut 2959. CENTRAL: 1456 Merchandise Mart, Chicago 54, Superior 1174. WESTERN: Western Merchandise Mart, 1355 Market Street, San Francisco 3, Underhill 2727. IN CANADA: Canadian General Electric Co., Ltd., Toronto, Ontario.

OLDEST AND LARGEST MANUFACTURERS OF ELECTRIC COOKING EQUIPMENT

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COMMERCIAL ELECTRIC COOKING EQUIPMENT

RANGES • BAKE OVENS • ROASTING OVENS • DEEP FAT FRY KETTLES • BROILERS • GRIDDLES

News Notes

Combined Issues of the Journal. As announced earlier in this JOURNAL for April, p. 250, the marked increase in circulation and the fact that no relief has been granted from the 1944 decreased paper allotment necessitate the combining of the July–August and September–October issues. The first of the combined issues is scheduled for mailing July 3; the second, September 2. Subsequent issues for 1945, namely, November and December, will appear as formerly.

Dietitians Overseas for UNRRA. Among the dietitians attached to this branch now serving overseas or preparing to go overseas are Frances B. Floore; Catherine Walters, formerly assistant to Anna M. Tracy, Florida State College for Women; Jane E. Grant, formerly at Mt. Morris Sanitarium, New York; and Ruth Flumerfelt, Wisconsin General Hospital, who has been assigned to the Italian Medical Nutrition Mission of the Unitarian Service Committee and Congregational-Christian Service Committee cooperating with UNRRA. More are needed for operations in Europe, according to Mr. C. H. Cramer, Assistant Director of Personnel, United Nations Relief and Rehabilitation Administration, 1344 Connecticut Avenue, Washington 25. The request came from Washington to the Chicago office of the A. D. A. for "stewards" able to organize and supervise "the cooking and feeding of 3000 to 10,000 people" and to prepare diet sheets from rations provided and delivered to the camp, manage camp food stores, and supervise locally engaged kitchen staff. It was pointed out that this was a job for the administrative dietitian and accordingly the credentials of several dietitians have been submitted to UNRRA headquarters. Other qualifications include: 30 to 40 years of age, and in exceptional cases up to 50; physical condition subject to UNRRA physical examination for overseas service or proof of satisfactorily passing Army physical within last 6 months; education, college degree preferable but not required; responsible and relevant administrative or professional experience; knowledge of one language in addition to English preferable but not required. As to personal traits, "successful candidates will be required to be of tough fiber and physically fit. Energy, willingness to work long hours under difficult conditions, flexibility, as well as genuine interest in the aims of UNRRA are essential."

Nutrition Meeting, A.A.A.S. Dr. Richard J. Block will be chairman of the Food and Nutrition Conference at the annual A.A.A.S. meeting at Gibson Island, Md., July 15–20, and Dr. Frank L. Gunderson will serve as vice-chairman. The program will include: The Clinical Aspects of Protein in Nutrition, by Dr. F. Co Tui; The Food Clinic in Nutrition, Dr. Fredrick J. Stare; The Rate of Enzymic Digestion of Protein as a Factor in Nutrition, Dr. Bernard L. Oser; and The Use of Lactic Acid Bacteria in the Study of Amino Acid, Dr. E. E. Snell and others.

Dietitians in Hospitals in the United States, 1944. According to the twenty-fourth annual presentation of hospital data by the Council on Medical Education and Hospitals of the American Medical Association in that association's *Journal*, March 31, registered hospitals in the United States, totaling 6611, with a bed capacity of 1,729,945, employed 6753 full-time and 695 part-time dietitians in 1944. In 1936 there was a total of 4331 dietitians employed in hospitals.

Legislation. H.R. 2386, introduced in the House of Representatives February 27, 1945 and referred to the Committee on Military Affairs, provides that "every woman who rendered service in uniform within the Army of the United States overseas during the period beginning April 6, 1917, and ending July 2, 1921, shall be held and considered (1) to have served in the Army of the United States during the period beginning with the date of the commencement of her service with the Army of the United States and ending on the date of her discharge from such service, and (2) if such discharge was under honorable conditions, to have been honorably discharged from the Army of the United States on the date of her discharge from such service . . . the term 'service in uniform with the Army of the United States' shall mean service rendered under assignment with, and while subject to the rules and regulations of, the Army of the United States, including service with the Signal, Ordnance, Quartermaster, Nurse, and Medical Corps, in uniforms furnished, approved, or prescribed, by the Army of the United States; and shall not include service rendered as a member of the American Red Cross or as a member of the Army Nurse Corps." This would include dietitians who served in the Medical Department overseas during World War I.

Among the "home economists" testifying before the House Agricultural Committee, April 25, as reported in the New York *Times* of that date, concerning the Pace "better diet" bill for research in human nutrition (H.R. 758. *See* p. 186 this JOURNAL, February), were: Dean Sarah Gibson Blanding and Charlotte M. Young, Cornell University; J. Ernestine Becker, Johns Hopkins School of Public Health; Mary S. Eheart, Virginia Polytechnic Institute; Florence B. King, University of Vermont; Dr. Pauline Beery Mack, Pennsylvania State College. The bill, if passed, after three years would give the states $2,000,000 annually and the Federal Government $500,000 annually for research in human nutrition.

The Mexico City Conference. A strengthened and revitalized Pan American Union emerged from the important actions of the recent Mexico City Conference designed to fortify the inter-American system for its role in the postwar world, as reported by the Office of Inter-American Affairs. The Governing Board, composed now of full-time delegates from the American republics, will continue to serve, as it has in the past, as the official secretariat of the American governments, but with more direct concern in "every matter which affects the effective functioning of the inter-American system and the solidarity and well-being of the republics." Chief changes provided in the conference resolution at Mexico City are to be in the executive organization of the Pan American Union and terms for office-holding. Conferences of hemisphere nature were also provided for in the resolution. International conferences of the American states are to be held every 4 years, the next scheduled in Bogota, Colombia, in 1946. The Governing Board of the Union also was authorized to call annual meetings of the Ministers of Foreign Affairs, and special meetings for emergency questions, through majority vote of the Board.

One of the most important measures concerning interdepartmental affairs of the Union was the creation of a permanent Inter-American Economic and Social Council to replace the emergency Inter-American Financial and Economic Advisory Committee, now functioning. The council is to work chiefly as a coordinating agency for all official inter-American economic and social activities. It will undertake special studies, either upon its own initiative or at the request of any American government, and will collect and prepare reports on economic and social subjects for use of the governments. Promotion of general social progress and the raising of the standard of living for all American peoples will be one of its principal objects. When a general international organization is established, the Inter-American Economic and Social Council will serve as a liaison agent with its corresponding organ.

As adopted by the conference, the "charter for women and children" recognizes the important role played by women of the Americas in aiding the war effort and in being chiefly responsible "for the atmosphere and surroundings of the home and the training of the citizens of the future." It gives women greater opportunity to serve in public office, providing for their inclusion "in every national department of health, social welfare and labor sections, preferably under the direction of qualified women." The charter further recommends that the Inter-American Commission of Women make a study of "all aspects of family life and the problems of the woman and the child," as a basis "for their welfare and the future of the population."

Conference of School Lunchroom Managers. The sixth annual conference and workshop for school lunchroom managers will be held at University, Ala., June 11–22. Conducted by State Department of Education and the School of Home Economics, University of Alabama Summer School, the conference will consist of workshops and discussions concerning the health of the school child, his growth and development, and his morale and ability to learn as influenced by the food he eats. To help the lunchroom manager to plan adequate and attractive meals, to prepare food so that none of the nutritive value is lost, and to operate a successful, healthful, efficient lunchroom, are among the announced plans of the conference directors. There will be five groups, rotating around the following workshops: menu planning and food purchasing, lunch preparation, equipment and kitchen plans, sanitation and dishwashing, and lunchroom planning. As in the past, New Hall will be the campus home for the conference and Lenna Mills will act as hostess. Rooms will be $6.50 for the period, and lunch and supper will be prepared and served in the workshop at $7. Breakfasts and meals for Saturday evening and Sunday are extra and may be taken in the university cafeteria. Reservations and inquiries should be addressed to Dr. E. Neige Todhunter, University, Ala.

Nutrition Foundation Grants. Among the grants, totaling $258,100, approved by the Nutrition Foundation at a meeting in New York, March 28, were: $47,500 to Harvard University for a 5-year study of nutrition in relation to maternal health, $10,500 to the Public Health Research Institute of the City of New York

out of the war . . .

Freshie VITA CRYSTALS

fortified with Vitamins B_1 and C

the dehydrated natural fruit juice drink

available in Orange, Lemon and Lime flavors

Contents

This can when packed, contained 1920 MG. VITAMIN C (ASCORBIC ACID), EQUAL TO 38,400 UNITS OF VITAMIN C, and 64 MG. VITAMIN B_1 (THIAMINE HYDROCHLORIDE). EQUAL TO 21,312 UNITS OF VITAMIN B_1.

The FINISHED BEVERAGE, made according to directions on label, will contain 600 UNITS (30 MG.) VITAMIN C and 333 UNITS (1 MG.) VITAMIN B_1, TO EACH 8-OUNCE GLASS.

These amounts are the daily minimum adult requirements, according to U. S. standards.

Food scientists for years have sought the answer to a way of dehydrating fruit juices that would retain important food values and freshness of flavor. Out of the laboratory of wartime necessity has come the *right* solution.

These delicious new dehydrated fruit juice flavors are called FRESHIE vita crystals—and are developed by a new and exclusive process. This great nutritional achievement brings you the equivalent of 80% of *natural tree ripened fruit juices.*

Easy to Prepare—Simple as A B C to prepare—ready to serve. Just add water to the dehydrated crystals and sweeten. Serve it cold as you would fresh pressed fruit juices. Young and old alike love its delicious true fruit flavor . . . and it's so economical, too. Serve this taste treat today—and often.

★

Details and prices on request.

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for a 3-year study of the development of microchemical methods for evaluating nutritional status, $10,000 to the University of Rochester School of Medicine and Dentistry for a 2-year study of the nature and significance of a pigment associated with vitamin deficiency. Other grants were made to the University of Pittsburgh for studies on self selection of diets, to Washington University for studies on the mechanism of carbohydrate reactions in animal tissues, and to the University of Wisconsin to study the characterization of compounds containing bound biotin and other vitamins. In addition, 24 renewals were approved for studies already under way.

Sugar Research Foundation Grants. Six grants, totaling $45,400, have been announced by this foundation which is sponsoring research into new industrial and nutritional uses for sugar. Dr. Pauline Beery Mack and associates of the Ellen H. Richards Institute, Pennsylvania State College, were awarded $20,000 for one year, to measure the effect of high and low sugar-containing diets upon the health, growth, and physical condition of children; Dr. Rachmiel Levine, director of metabolic and endocrine research at Michael Reese Hospital, Chicago, $7,500 for one year, to study the physiological behavior of levulose; Professor I. L. Chaikoff, University of California, $7,400 for two years, to study the protective action of sugar against cirrhosis of the liver; Dr. I. M. Rabinowitch, McGill University Medical School, Montreal, $2,500 for one year, to study further the body's relative rate of absorption of sucrose, dextrose, and levulose.

Nurses Study Veterans' Facilities. With a view to recommending ways to better the nursing service of the Veterans Administration, the National Nursing Council for War Service named a committee of nurses to visit different types of facility in April and report on procedures found in operation and conditions under which nurses work. While nurses in the military services are officers, Civil Service rates the veterans' nurses as "subprofessional." The latter do not receive pensions while ill and various other benefits under the G.I. bill. Mrs. Elmira B. Wickenden, secretary of the National Nursing Council, declared that "one good way to assure adequate nursing service for veterans would be to review the whole problem of pay, professional status and working conditions in the service and make them conform more nearly to the best practices."

Rationing and Price Control. Point values for pork, pork products, lard, shortening, margarine, salad and cooking oils were increased 1 to 3 points during the rationing period beginning April 1. Price Administrator Chester Bowles, in announcing these increases, stated that while civilians would have less meat during the rest of this year, there would still be enough to meet all essential needs. WFA estimated that there would be about 12% less meat for civilians during the second quarter than during the first 3 months of this year, and that this would be felt in May and June when there is normally a sharper seasonal decline in the production of meat.

Specific maximum prices for Swiss cheese imported from Switzerland have been established by OPA and are, at all levels of distribution, about 12¾ cents per pound higher than maximum prices in effect for Swiss cheese produced in this country. Each wheel of the imported Swiss cheese is to be stamped on both flat sides with "Imported From Switzerland" and other identifying marks.

National Food Situation. Manufacturers are no longer required to set aside any of their production of candy bars, rolls and packages made to retail at 5 cents for procurement by the armed forces. All procurement of these confections for the military services will be handled direct with manufacturers.

WFA announced April 4 that growing war requirements for all major manufactured dairy products and continued tight supplies of butter, cheese and evaporated milk for civilian use, make it necessary to continue limitations on the sale of fluid milk and cream even during the spring and summer months of peak milk production. However, increases in sales quotas on milk by-products will be permitted as necessary to assure full utilization of the skim milk from which these products are made. Sales restrictions on cottage cheese were removed in October 1944.

WFA in April offered for sale to the original processors 1154 cases plain dry soup concentrate, 1123 cases dehydrated powdered yellow pea soup, 9872 cases dry soup concentrate, brewers' yeast added; also 221 cases of canned corn packed in 1942 and 136,393 cases of canned peas from the 1942, 1943, and 1944 packs.

Meat supplies probably will continue short of demand at ceiling prices at least through the summer of 1945, according to USDA's *Livestock and Wool Situation*, March. Total meat production for the year is expected to be about 10% less than the record output in 1944, with most of the decrease occurring in pork. Supplies of meat available for civilians are showing a relatively greater decrease in urban areas than in areas close to production centers. A tentative program to provide more uniform distribution of the civilian meat supply was discussed at the April 9 meeting of representatives of the meat and livestock industry, farm organizations, OPA and other government agencies. OPA's plan in general will be directed at channeling more meat through federally-inspected slaughtering plants and encouraging more nonfederally inspected plants to secure full or partial federal inspection. The armed forces buy only federally-inspected meat, and at present need a large percentage of the total output. Federally-inspected meat is also the only meat that may be transported across state lines. Channeling a more normal proportion of the total meat supply through federally-inspected plants should make more meat available for the armed forces and for civilians in areas where little or no local slaughtering is done and where civilians are largely dependent on federally-inspected meats.

According to the *Poultry and Egg Situation*, supplies of eggs available for civilians in 1945 may be larger than last year, primarily because of declines in WFA procurement, even though output will be about 10% less. Although civilian consumption in 1945 may be above the previous record of 1944, demand probably will exceed supply after the flush production season, resulting from a continuation of high level of consumer income and shortages of other foods, mainly meat. WFA has urged poultry producers to increase production for meat purposes only, to aid military needs and supplement the civilian supply. The Office of Economic Stabilization has authorized OPA to raise price ceilings effective July 1 on young chickens. Increases will average about 1.25 cents per pound on an annual basis, ranging from 0.5 to 1.6 cents per pound, depending on the area.

WFA is offering for sale to food distributors, purchasing agents, hotel and restaurant suppliers, 2505 cases of 1943-pack fancy grade quince jam and 1500 cases of nectarine jam, described as "off-grade because of color, but in excellent condition"; also, 728,850 cases of canned peas, of the 1942 and 1943 packs.

Nutrition Program Materials. A leaflet entitled *Potatoes in Popular Ways* supersedes *Potatoes in Low-Cost Meals*, issued by BHNHE, Agricultural Research Administration, USDA, and sold by the Superintendent of Documents, Washington 25, at $1 per 100 copies. Specific directions for boiled, mashed, and creamed potatoes are given, in addition to recipes for potato scallop, soup, hot pot, salad, cakes, crust, puff, and griddle scones.

Consumer Study on Labels. According to a release distributed by Mabel Flanley of Flanley and Woodward, 551 Fifth Ave., New York 17, the label study of the American Home Economics Association promises action which will make consumers more alert to the importance of labels, stimulate them to read labels and to select purchases according to the information they find there. The Grocery Manufacturers of America launched their program for descriptive labeling last fall with this same ultimate objective in view. Esther Latzke, Armour & Company, is chairman of the committee appointed to carry on the campaign. Other members are directors of home service departments of large manufacturing concerns. During the first few months the program has been directed chiefly to member companies, in order that manufacturers might study their own labels for revision. Also some studies on consumer preference have been conducted and plans laid for consumer participation in the program.

Paul S. Willis, president of the G.M.A., states, "We hope other consumer groups will follow the example set by the American Home Economics Association, and other groups of manufacturers the pattern now being established by the Grocery Manufacturers of America. Consumers stand to benefit by any program designed to give them the kind of information they want for intelligent purchasing."

Industrial Health Session. The Industrial Nutrition Committee of Essex and West Hudson Counties, New Jersey, held a meeting at the Academy of Medicine, Newark, March 28, which stressed the value of cooperation between medical department and cafeteria management in maintaining the health of war workers. Dr. Norman Jolliffe spoke on Determining Nutritional Deficiencies in Workers, and Dr. John H. Foulger, director of the Haskell Laboratory of Industrial Toxicology, Wilmington, Del., on The Relation of Industrial Toxins to the Nutritional Needs of the Worker. The relation of nutrition to accidents, fatigue, morale, and absenteeism was discussed by Dr. A. H. Haskin, chairman, health section of the Nutrition Committee. A film, "Training Table," was shown. Samples of personal score cards and a wartime meal pattern, prepared by the Nutrition Committee in cooperation with the Newark Department of Health, and suitable for distribution to war workers, were given to the more than 100 representatives of plant medical departments, industrial nurses, cafeteria managers, nutritionists, and health officers who attended the meeting.

Veteran's Guide, a 32-page, illustrated pamphlet prepared by Dallas Johnson, price 10 cents, has just been published by the Public Affairs Committee of New York, a nonprofit organization, at 30 Rockefeller Plaza, New York 20. The pamphlet tells the veteran how to go about getting a former job back, where to look for a new one, and how to determine the kind of job he is best fitted for. Preference for veterans in Civil Service appointments

Ready to solve your dishwashing problems

THIS is an age of specialization — and right in line with the times are Wyandotte dishwashing compounds. There's one of them especially made for each type of job.

Wyandotte Keego* is for washing dishes by machine, in soft water or hard. It removes soil quickly, rinses freely, leaves no trace of streak or stain.

The all-around cleaner for washing by hand is Wyandotte H. D. C.* Sudsy and containing soap, it works effectively in the hardest water.

Wyandotte Neosuds* is ideal for washing glassware by hand. It makes quantities of suds but contains no soap.

Let the Wyandotte Representative show you how these products will solve *your* particular dishwashing problems.

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is explained; and there is an analysis of the chances for getting good wages and for keeping a job, once it has been found. Those who want to continue their education where they left off before the war or who want to secure additional instruction, those who want to learn a new trade, and those who need training to overcome war-inflicted handicaps will find their questions answered in a section entitled "Your Education After the War." All the facts in this guide have been checked for accuracy with the Government and private agencies concerned.

Grading of Foods From Mexico. A permanent subcommittee to determine the practicability of establishing uniform standards and grades of agricultural products actually or potentially important in trade between Mexico and the United States was created by the Mexican-United States Agricultural Commission at its recent meeting in Washington. Special attention is to be directed to bananas and other seasonably important fruits and vegetables. Cattle and meats also will be considered.

Home and Garden Broadcast. Every Saturday, 12:30 p.m. Eastern War Time, the Blue Network of the American Broadcasting Company, in cooperation with USDA and WFA, presents "Your Home and Garden," a program serving homemakers and home gardeners. Ruth Van Deman, Information Division, BHNHE, presents facts for homemakers about food supplies, ideas on how to make the most of food and clothing, suggestions on keeping the family well fed, tips on care of household equipment. Ernie Moore, manager of USDA's Victory Garden program, offers timely tips on planning, soil preparation, fertilizing, insecticides, and other topics of interest to gardeners.

Canning Corner. Household equipment specialists of USDA suggest, in Food and Home Notes, April 23, that canning equipment be given priority on space in cupboards and shelves near stove and sink for the duration of the canning season, especially for those who include an hour or so of canning in the day's work. Other utensils, not used so much in summer, may be moved to high shelves or elsewhere. All utensils needed for the canning job should be kept together for convenient use. Some women prefer to locate their summer canning center in the laundry, where table, shelves, stove, and good water supply provide a more convenient place for regular day-by-day canning than a small kitchen.

Home Canning of Meat. A booklet based on new research by food preservation specialists of USDA has been published, entitled *Home Canning of Meat*. In these studies, meat was packed two ways—hot and raw—and in tin cans as well as in types of home canning jars. By inserting thermocouples into jars and cans of meat inside steam pressure canners, data were obtained on heat penetration in different types of pack, when processed by home methods. As a control test of effectiveness of the heating, some packs were inoculated before canning with a selected type of spoilage bacteria. Nutritive value of meat before and after canning was tested. As a result of this research, the leaflet recommends 240°F. (10 lb. pressure) instead of 250°F. (15 lb. pressure) as in the earlier publication, Farmers' Bulletin 1762. Processing times are also shortened as much as is considered safe for adequate sterilization. It is stated that meat processed at the new times and temperatures retains more thiamin than meat processed according to previous recommendations.

Directions for a raw pack as well as a hot pack are given where both methods give satisfactory results. Whichever way the meat is packed, processing times are calculated on the assumption that meat will be hot when processing under steam pressure begins. It takes longer to exhaust—that is, to heat the food in the open containers—in glass jars than in tin cans.

Frying chicken or other meat prior to canning is not recommended, as the heat causes the fat to break down chemically, nor is the home canning of such mixtures as chile con carne, stew with vegetables, and so on.

Step-by-step photographs illustrate how to can meat and poultry both by raw and hot pack, and in glass jars or tin cans. Information concerning equipment is included, also canning timetable, directions for figuring yield of canned meat, and suggestions for proper storage.

To obtain a free copy, write to USDA, Washington 25.

Freezing Meat and Poultry Products. A folder of illustrated directions for freezing meat, poultry, eggs and fish, (AWI-75) *Freezing Meat and Poultry Products for Home Use*, may be obtained free from the Office of Information, USDA, Washington 25.

Frozen Food Packaging. A high-speed frozen food packaging machine which may make it practical to handle all consumer packaging promptly at harvest time, instead of resorting to temporary bulk storage, has been developed, according to the *Food Field Reporter*. The machine automatically feeds, opens, fills and closes 75 to 80 vegetable packages per minute. It requires less than one fifth the manpower and will greatly reduce the cost of packaging. The carton used with the machine requires no liner.

Storage Temperatures and Aging. To illustrate the effect of different storage temperatures, Dr. C. O. Bratley, plant pathologist, USDA, states that every day an apple or pear is held at room temperature after harvest, its storage life is decreased by more than a week. At 70°F. apples soften about twice as fast as at 50; at 50°F. about twice as fast as at 40; and at 40°F. about twice as fast as at 32. In addition, temperature has the same relative effect on decay and loss of vitamins.

Trichinosis. Reports of recent extensive outbreaks of trichinosis have caused the Bureau of Animal Industry of USDA to repeat its caution to cook pork and its products well, unless it is known that they were processed by special methods of heating, curing, or freezing under federal or other equally thorough meat inspection.

One outbreak of trichinosis in Iowa involving 130 persons during January was traced to locally manufactured, nonfederally inspected, smoked sausage known as mettwurst. A second outbreak was reported in New York in March. There the apparent cause was also mettwurst, together with similar products made from pork in an establishment not operating under federal inspection. According to Dr. Benjamin Schwartz, head parasitologist of the Bureau, mettwurst and other types of sausage customarily prepared to be eaten without cooking must, when prepared under federal inspection, be processed in a manner known to be effective in destroying trichinae. When such products are prepared without competent supervision, there is always danger that they may be inadequately processed.

Canning Asparagus. Home economists of USDA offer the following suggestions on picking and canning asparagus: Only fresh, tender asparagus is suitable. The "2 hours from garden to can" rule is especially important with asparagus because it may get stringy and will lose flavor when it wilts. If asparagus must be held even a few hours before canning, keep it cold and moist. Asparagus is at its best when harvested in the early morning. Since it grows rapidly, it needs to be cut every day in warm weather—and therefore canned in small batches. Generally the shoots should be cut off about 2 in. below ground when they are from 6 to 7 in. high.

Because it is a nonacid vegetable, asparagus is canned safely at home only in a pressure canner. To prepare for canning, first wash asparagus thoroughly—preferably in cold running water. Trim off the scales along the stalks as well as any tough, woody ends. The scales are pockets for sand and dirt in which may be lurking dangerous, spoilage-causing bacteria. Cut the stalks into 1-in. pieces, cover with boiling water, and boil 2 or 3 min. Pack hot into clean hot jars and cover with hot cooking liquid, leaving ½-in. headspace at top of jars. Add 1 tsp. salt to each quart when packed. Process at 10 lb. pressure: pint jars, 35 min.; quart jars, 40 min.

If whole asparagus is desired, trim the stalks so that they fit upright in jars, allowing for ¾-in. headspace. Tie in uniform bundles, and stand upright in kettle in 3 or 4 in. boiling water. Cover tightly and boil 2 to 3 min. Pack the hot asparagus into clean hot jars, salt, and process as for asparagus pieces.

Oranges. *Food and Home Notes*, USDA, April 16, reports that tests at the Arizona Agricultural Experiment Station on navel oranges, sweet seedlings, and Valencias prepared for serving in different ways showed that oranges in segments offer more vitamin C than those prepared in any other way; sliced oranges rank next; then unstrained juice; and finally strained juice. Strained juice contains only one half to three fourths the amount of vitamin C contained in the segments. Tests also showed that orange juice can stand overnight or a day in the refrigerator without much loss of vitamin C. On an average, not more than 5% was lost.

Strawberry Spreads. To stretch sugar in strawberry spreads, home economists of USDA suggest the following: Use the minimum amount given in the jelly recipe. Most jams and preserves call for equal parts by weight of sugar and fruit, but satisfactory spreads, with more natural fruit flavor, can be made with three fourths as much sugar; 1 lb. sugar is enough for about 1½ to 2 pints, or 6 jelly glasses of strawberry jam, though yields may vary widely with cooking method and time, pectin content, etc. Or, replace up to one half the sugar with an equal measure of honey in jams, jellies, or preserves; replace up to one fourth the sugar with an equal measure of corn syrup in jams or jellies, or replace one half the sugar in preserves with an equal measure of corn syrup. In making strawberry jam, use a wide, shallow kettle, and cook in small batches. Speedy jam-making helps hold the natural bright color and flavor of the berries, and cuts down on loss of vitamin C. The following recipe is suggested: 2 qt. berries, 1½ lb. sugar, 1 to 1½ tbsp. lemon juice. Wash berries, drain, cap and pick out the largest. Take about 2 cups of the smaller fruit, crush, and add sugar. Cook rapidly in an enameled saucepan and stir until sugar is dissolved and a thick syrup is formed. Add the remainder of fruit and continue rapid cooking, stirring frequently to prevent scorching. Cook 20 to 30 min., or until fairly thick, then add lemon juice. Pour into hot sterilized jars, seal, and store in a cool place.

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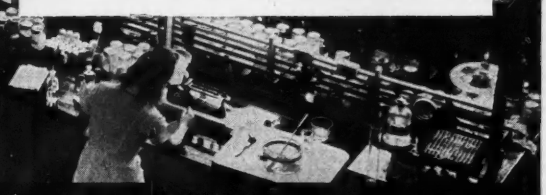

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Wild Greens. Good reasons for the reputation of wild greens as spring tonics have come to light through recent research at several state experiment stations which show that many common greens from fields and woods are rich in vitamins A and C, according to *Food and Home Notes*. The New Mexico station found that dock, pigweed, wild mustard, lamb's-quarters and Russian thistle are particularly rich in carotene and ascorbic acid, but that dandelion, purslane and sow thistle are less rich. The Florida station reports that three common wild greens showed high vitamin values—lamb's-quarters, pokeweed (for "poke salad"), and coffeeweed (chicory, or curled dock). How wild greens compare with cultivated greens in vitamin value has been investigated at the Oklahoma and Maine stations. The former tested fresh, cooked and frozen wild greens and found that pokeweed, tall dock, and curled dock contain twice as much vitamin C as spinach; "poverty" weed and lamb's-quarters about the same amount; but chickweed, dandelion and prickly lettuce contain less. Vitamin C content appears to be greater in plants exposed to full sunlight, growing in fertile, uncultivated soil. The Maine station reports that dandelions and fiddleheads (ostrich fern) have about the same riboflavin value as cultivated greens.

Pickled Beets. To prepare beets for pickling USDA home economists suggest: boil 30 to 45 min., or until just tender, in water to cover. Remove skins, slice, dice, or if small, leave whole. Pack the hot cooked beets into clean hot jars. Cover with boiling liquid (2 cups vinegar to 1 cup sugar). Spices—cinnamon, cloves, allspice or peppercorns—may be heated with the vinegar and sugar, if desired. Add 1 tsp. salt to each quart jar. Adjust lids and process 30 min. in boiling water bath.

Cooking Vegetables. The rule that only boiling water should be used in cooking vegetables has received added support from recent research. At the Alabama Experiment Station, turnip greens put on to cook in about their own weight of cold water and cooked 30 min. from the time boiling began, retained only about a third of their original vitamin C. Those immersed in boiling water and boiled the same length of time retained three fourths of their vitamin C. Asparagus and green beans cooked by these methods retained much more vitamin C when started in boiling water. The Michigan Experiment Station reports that plunging greens into boiling water saves more vitamin C than cooking with only the water that clings to the leaves. Chard and beet tops were tested. Chard, cooked about 22 min. in a covered pan with no water except that left on the leaves after washing, held only 5 to 8% of its vitamin C, beet greens, only 16 to 17%. When plunged into rapidly boiling water, they cooked to the same tenderness in 7 to 8 min., and the chard held 12 to 26% of its original vitamin C, the beet greens 25 to 35%.

Eggs. Medium-sized eggs are as good a buy as large eggs of the same grade when they are at least one eighth cheaper, while small eggs are as economical as large eggs when they are at least one quarter cheaper, say USDA food economists. Large U. S. Government graded eggs weigh a minimum of 24 oz. per dozen; medium, from 21 to 23 oz.; and small, at least 18 oz. Large eggs may not be so plentiful as usual this year, because several million dozen of this size are needed for the armed forces overseas.

How to Get and Keep Restaurant Employees. This is the title of a very useful booklet, one of a series of "Yearly Reference Books," published by the New York State Restaurant Association, Inc., 369 Lexington Ave., New York 17. The information was obtained from operators of restaurants throughout New York State who have been successful in attracting employees and keeping them. The booklet is designed to provide assistance in the training of new employees. All of the information is well organized and in many instances, steps in various procedures are listed and numbered. Chapters cover the following: Where to Find Employees; Pointers on Picking People, including a model application blank; Selecting Dining Room Employees, listing and describing each separate qualification; How to Select Kitchen Employees; Job Instructor Training Methods, with samples of job breakdowns, and description of the whole method; Tips on Training, including delineation of responsibilities and duties of captain (or hostess), cashier, head waiter, checker, bus boy or girl; Inter-Departmental Cooperation, listing specific means by which employees of kitchen and dining room can promote better cooperation; Kitchen Employees' Duties; Training Counter Servers; Safety Hints for Employees; Sanitation. Final chapters cover provision and care of uniforms and suggestions on "How to Keep Employees Happy," including working conditions, compensation policy, and payroll calculator. Much general information and many helpful suggestions are interspersed with the specific rules and facts throughout the text.

Copies of the book may be obtained by nonmembers from the above address at $1 each, or in quantities of 25 or more, at 50 cents each.

Serve More Split Peas. Virginia R. Beneke, director, Restaurant Service, National Association of Split Pea Processors, 332 S. Michigan Ave., Chicago 4, has devised some point-free, low-cost, and delicious split pea recipes which should be of interest to dietitians.

National Restaurant Association. The association has published a résumé of the Personnel Administration short course given at the University of Chicago in February, in the *Educational Department Bulletin*, the final instalment appearing in the April 11 issue. High lights of the talks of the several speakers are included, also a list of references on personnel administration.

Two 9 by 12-in. bulletins for posting on restaurant employees' bulletin boards are being distributed by the association, entitled "A Well-Trained Restaurant Employee" and "The Objects of a Modern Restaurant," and are intended to be especially helpful with the increased turnover of help. The former lists 7 attributes of a well-trained employee; the latter tells how the confidence of the customers is earned by the employees and the management. Copies are available free to members from the headquarters office: 8 S. Michigan Ave., Chicago 3.

Trouble Sound. Just as an engine knock may be a sign of trouble in an automobile, so any strange noise in a household motor—in the washing machine, sewing machine, vacuum cleaner or refrigerator—calls for investigation by a repairman, say household equipment specialists of USDA. A rattle or tinkle usually is a sign that something is loose and needs tightening before serious trouble begins. Knocks, bangs, or other loud noises may mean serious trouble.

Dietitian Marries Fighter Pilot. War correspondent Marjorie Avery, in her regular column in the *Detroit Free Press*, described the marriage of Lt. Frances C. Austin, of Orleans, Vt., assistant dietitian of the 56th General Hospital and a member of the A. D.A., to Lt. Donald M. Ferris, a fighter pilot from Detroit, on March 17, Somewhere in Belgium. Lieutenant Ferris participated in every major campaign from D-day to the battle of Germany and has flown 89 missions. He holds the Air Medal with 12 Oak Leaf Clusters. Mrs. Ferris has been overseas since October 1943. After the ceremony, which was performed in a chapel built in 1276, the couple boarded a B-17 for a honeymoon in England.

Lt. Frances Moss Promoted. Lieutenant Moss, stationed in New Caledonia, writes as follows: "I want to tell you that I became a first lieutenant March 11. Have been receiving my JOURNAL regularly and must say I enjoy it more than any other reading material I get. Seems there are always helpful suggestions in it."

Elizabeth Woody Appointed Director, Consumers Institute. Elizabeth Woody, formerly director of foods for *McCall's Magazine*, and well known to many dietitians, has been appointed director, General Electric Consumers Institute, Bridgeport, Conn. Miss Woody will direct a broad program of basic food research and an extensive consumer information program designed to disseminate as widely as possible practical solutions to homemaking problems. She and her staff will test all appliances in the institute's laboratories from the housewife's viewpoint, checking with factory engineers their findings in the homes of consumers. Dr. Donald K. Tressler will continue as a consultant to the General Electric Company on special problems in connection with food technology.

Canadian News. The Canadian Home Economics *Newsletter* for April reports that the Royal Canadian Mounted Police have added a historical note to their archives with the appointment of a dietitian for the Ottawa division mess. Christina Robertson, of High River, Alberta, was appointed in February, and it is understood that more are required. Miss Robertson is a University of Alberta graduate, was dietitian in various hospitals before joining the staff of the Nutrition Division, Ottawa. She transferred to the R.C.M.P. following a year's supervision of R.C.M.P. meals by the industrial division of the Nutrition Division.

Jean I. Hutt, formerly of the Sick Children's Hospital, Toronto, has been appointed nutritionist for the Visiting Homemakers' Branch of the Canadian Red Cross Society, London, Ontario.

Arizona Dietetic Association. The semiannual meeting of the association was held at the Arizona State Teacher's College, Tempe, March 24. It was decided that the executive board should revise the state constitution to conform with the changes which have been made in the national Constitution. Suggestions for nominations of officers for the national Association were submitted as requested by the Association's Nominating Committee.

Ansta Todd reported that the Library Committee will work with similar committees of the home economics association and the Nutrition Council, so as to avoid overlapping.

The president, Clara May Brown, appointed Dorothy Bradfield and Jessie Obert to be responsible for continued collection of material concerning the association's history.

Miss Bradfield, chairman of the Community Nutrition Section, reported that material on industrial foods had been ordered and turned over to the State Nutrition Council for distribution.

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Miss Obert, secretary, reported that the association had offered its services as consultants to the executive secretary of a local Y.M.C.A. chapter in planning the food service for a new Y.M.C.A. building.

Colorado Dietetic Association. The annual meeting was held in Denver, May 19. Lt. Maryethyl Meyer, Fitzsimons General Hospital, presided. Aline Haakinson, University of Colorado School of Medicine and Hospitals, is president-elect. Other officers elected at the meeting will be announced later. Speakers and their subjects included: Dr. G. Robert Fisher, informal discussion on the newer trends of allergy; Mrs. Cora Kusner, Colorado State Hospital, Pueblo, Dietetics as an Art; and Mrs. Bly Curtis, supervisor of dormitory food service, University of Colorado. At the business meeting the new state constitution was presented for approval.

Evaline McNary has resigned as head dietitian, St. Luke's Hospital, Denver, and has been appointed director of the dormitory food service, Colorado College, Colorado Springs. Dorothy Eagen, teaching dietitian, St. Luke's Hospital, will be Miss McNary's assistant.

Ruth Palmes, therapeutic dietitian, Colorado General Hospital, has resigned to attend medical school July 1 at the University of Colorado School of Medicine and Hospitals.

Student dietitians training at Colorado State Hospital include: Margaret Batson and Marjorie Foster, Colorado State College; Luginia Carter, Alabama Polytechnic Institute; Maxine Robnik, School of St. Catherine, St. Paul, Minn.; Alice Stevenson, University of California; and Leota Walters, Kansas State College.

Hawaii Dietetic Association. At the January meeting at the Mabel Smythe Memorial, Lieutenant Gifford discussed Mass Feeding in the U. S. Navy. In February the members visited the Cooks and Bakers School at the Jungle Training Center and had luncheon, consisting mainly of dehydrated foods, with the service personnel. Speakers at the March meeting were Corinne von Wedelstaedt, secretary, Oahu Restaurant Association, and Mr. Robinson, chief, Sanitation Department, Board of Health, Honolulu.

The chief problem of the Dietary Department at Queen's Hospital has been that of dishwashing. The "Seabees" who had been of great help in this particular field were withdrawn by naval order in February and the dietitians were forced to carry on alone. However, in response to the hospital administrator's "Call for Emergency Help" stenographers, telephone operators, social workers, personnel director and purchasing agents volunteered their assistance, and relieved the situation. The hospital paid 75 cents an hour and the volunteers worked on their days off and extra hours.

Harriet Goodale has resigned from the staff at Queen's Hospital to enlist in the Army. She was commissioned on December 26 and is stationed at an Army hospital. Agnes Vennewitz, formerly of Fairview Hospital, Minneapolis, has replaced Lieutenant Goodale at Queen's Hospital. Ruth Rummell, formerly of Ancker Hospital, St. Paul, Minn., is a new staff member at St. Francis Hospital.

Kansas Dietetic Association. At the meeting of the Executive Committee, March 17, it was decided, in compliance with recent ruling of ODT, to cancel the annual state meeting. However, it was also voted that as soon as feasible, two one-day meetings would be held yearly, one soon after the A. D. A. convention to inform state members concerning activities of the national association, and one in the spring as a refresher meeting. Mrs. Bessie Brooks West, president-elect, A. D. A., reported on recent national legislation regarding flour enrichment and the school lunch program at the meeting. The Community Nutrition section offered a report of two major projects, both of which will be continued during the remainder of the year. One was the furnishing of recipes and menus to small hospitals unable to obtain the services of a qualified dietitian and personal visits in an effort to adapt the menus to specific hospitals. The second project consisted of a survey of Kansas counties to determine the extent to which the WFA school lunch program is used, and the reaction of school officials. Only five counties are without this program, which is followed in from 1 to 26 schools throughout the remaining counties. Principals and teachers report "physical condition of students improved"; "fewer colds"; and "children more alert." Some who were not previously in favor of the program would not discontinue it now "even if reimbursement did not take place."

The Department of Institutional Management, Kansas State College, announced a Workshop in School Lunchroom Management to be conducted at Manhattan, June 4–16. The regular staff of the department will be in charge, offering recitation, discussion and laboratory periods planned especially to meet the needs of public school teachers whose duties include management and supervision of school lunchrooms and special meals. Those enrolled may obtain college credit, not to exceed a total of 2 hours for the course.

Mrs. Bessie Brooks West was the dinner guest of the Kansas City (Missouri) Dietetic Association, April 23. Mrs. West spoke on The Dietitian's Place in the Postwar World. Mrs. Ruth Heckler, president of the Kansas Dietetic Association, Alice Halter, dietitian at Bethany Hospital, and Virginia Shinkle, area chairman of the Professional Education Committee, attended this dinner, which included dietitians of Greater Kansas City.

Kathryn Tissue, professor of nutrition at the University of Kansas, is again at work after recovering from virus pneumonia and is devoting time to the projects of the Diet Therapy Section. The Kansas section is cooperating on Project No. 2, Ways of Constructing and Improving Palatability of High-Protein Diets Through the Use of Natural Foods and on Project No. 3, The Preparation of an Annotated Bibliography Dealing With the Mechanical, Chemical, and Thermal Characteristics of the Bland Diet.

Katherine Marsh, chairman of the Professional Education Committee, is attempting to contact high school and junior college students over the state who may be interested in dietetics as a profession. Miss Marsh has divided the state into 14 sections with dietitians in charge of the distribution of copies of *Dietetics as a Profession* in each.

Recent graduates of the University of Kansas now serving as Army dietitians are: Lts. Elizabeth Daley Sanderson, Madigan General Hospital, Tacoma, Wash.; Margaret Louise Slentz, Borden G. H., Okla.; Jane Kinnamon, Hammond G.H.; Margaret Whitehead, Walter Reed Hospital. Lt. Millie Regier, now with the armed services in England, has recently been promoted to the rank of first lieutenant.

Three graduates of Mount St. Scholastica College, Atchison, are Medical Department Dietitians: Lts. Monica Farrell, recently therapeutic dietitian at Ft. Warren, Wyo., now in Hawaii; Joyce Wilson, Camp Pickett, Va.; Kathleen McGurk-Moultise, overseas. Marta Wood is now medical nutrition assistant. Sister Ethelburg Leuschen, instructor in nutrition at Mount St. Scholastica College, is an area chairman for the Professional Education Section.

Marymount College Home Economics Club, Salina, under the direction of Sister Regina Marie, provided an opportunity for the recruitment of potential dietitians April 15 at a conference held in Salina. Copies of *Dietitians Are Urgently Needed* were given to all of the girls in attendance. Copies of *Dietetics as a Profession* were given to the sponsors.

Gladys Sissel, dietitian in charge of the University of Wichita Commons, has been active in an advisory capacity in installation of institution equipment. The University Commons is completing the remodeling of the pastry department and is installing a two-deck electric combination baking and roasting oven. Miss Sissel is also acting in an advisory capacity for the Wichita Red Cross Headquarters office in adding equipment to facilitate their canteen service.

Mrs. Ralf E. Hockens (Alice E. Miller) is living on a farm near Arrington, Kans., after spending four years in Puerto Rico, three in Chile, two in Bolivia, and a year in Arizona. Virginia Shinkle is a teacher and dietitian in Central Junior High School, Kansas City. Last summer she was assistant dietitian in St. Luke's Hospital, Kansas City, Mo. Patricia Beezley, graduate of Kansas State College, is in charge of food production at Anna Maude's Cafeteria in Oklahoma City.

Twenty-five of the forty dietetic majors at Kansas State College plan to take a fifth year of training to complete the requirements for the hospital or institutional field. A number will go into the Army at the end of their training period.

Dr. Martha S. Pittman, president-elect of the association, reports that a rather extensive news letter is planned, to carry to members information which ordinarily would be presented at the state convention.

Maryland Dietetic Association. At the April meeting held at the Baltimore Red Cross headquarters, Mrs. Amea Willoughby, staff member of the Red Cross, spoke on the subject of food packages sent to prisoners of war. Mrs. Willoughby was evacuated from Corregidor by submarine and had firsthand information of the hardships endured at that time.

The Baltimore Red Cross Nutrition Service, in cooperation with the Low Cost Budget Committee, recently conducted an institute on nutrition in social work. Speakers included J. Ernestine Becker, Johns Hopkins School of Public Health; Marion Riley, State Department of Health; Mrs. Felisa Bracken and Esther Lazarus, Department of Public Welfare.

Lts. Kathleen Lewis and Ethel Olney, who have been with the same hospital unit in India, have returned to the United States. Lieutenant Lewis, who has been overseas 34 months, will report to Ashville, N. C. for her new assignment, and Lieutenant Olney is now at Hot Springs, Ark.

New Army students at Johns Hopkins Hospital are Jean Barker, Helen Fort, Elsie Fryling, and Nancy Orleman.

E. E. Wright, Richmond College, is now in charge of the Formula Room at Johns Hopkins Hospital, and Irma Wolfson, graduate of the Boston Dispensary, is on the staff of the Food Clinic.

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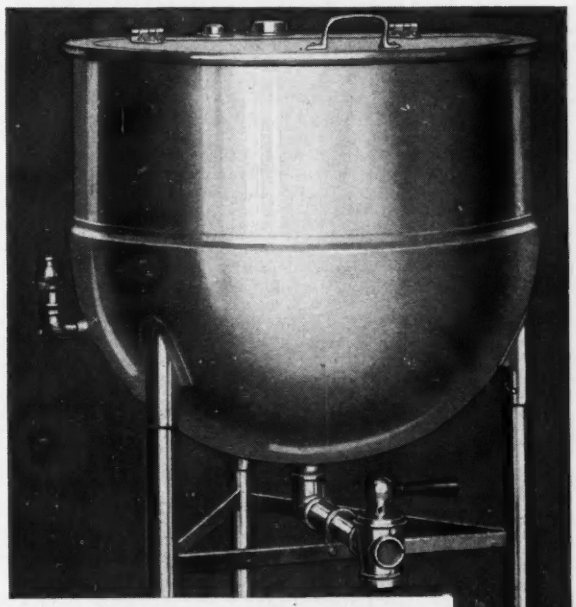

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The engagement of Lt. Mary Arthur Triplett, staff dietitian of an Army hospital in England, to Lt. Robert Coleman Garland was recently announced.

New Jersey Dietetic Association. The spring meeting of the association was held at the West Jersey Homeopathic Hospital, Camden, April 20. The program was arranged by the Diet Therapy and Professional Education Committees. Tropical diseases were discussed by Dr. Grant O. Favorite, chief, Department of Pathology, West Jersey Homeopathic Hospital, and assistant demonstrator, Department of Bacteriology and Immunology, Jefferson Medical College. Problems in nutrition teaching to nurses brought about by increase in number and the accelerated program were discussed by Henderika J. Rynbergen, New York Hospital.

The South Jersey group held its first meeting at Cooper Hospital, Camden, March 22, with Lillian Myers as chairman. Informal discussions were held on administrative and therapeutic problems. The group plans to hold meetings at frequent intervals.

Ohio Dietetic Association. The Akron Dietetic Association at their April 19 meeting adopted the new constitution drawn up by a committee composed of Ellen Martin, Children's Hospital; Jean Landefeld, City Hospital; Mrs. Marcia Weston, Peoples Hospital; Frances Hooker, St. Thomas Hospital; and Mrs. Eula Robins, Goodyear Tire and Rubber Company.

At the March meeting of the Canton Dietetic Association, Mrs. Thomas MacKler discussed The Food Situation Abroad Before the War, illustrating her talk with pictures of various dining locales, menus, and linens. A round-table discussion led by Dorothy Weaver, East Ohio Gas Company, on the subject, Why Food is Scarce, concluded the meeting.

Members of the Cincinnati Dietetic Association, meeting recently at the Jewish Hospital Nurses Home, were addressed by Fred Geisel, business manager of the Cincinnati *Post*, on the subject, What I Think Today About Tomorrow.

The May meeting of the Cleveland Dietetic Association was held at Lutheran Hospital. The program included election of officers for the coming year, reports on the recruitment program for prospective dietitians, and a discussion of state and national association projects.

The annual dinner of the Columbus Dietetic Association was held at the Fort Hayes Hotel, April 4, with over 50 members and friends in attendance. Dr. Helen Coops of the American Red Cross gave a very interesting account of her experiences in England.

Doris Mauntler, formerly administrative dietitian at Christ Hospital, Cincinnati, is now stationed at Billings General Hospital, Fort Benjamin Harrison, Indianapolis. Lt. Elinor Benson, formerly on the University Hospital staff, is now stationed in New Caledonia.

Recent appointments include the following: Rebecca Harris, Philadelphia General Hospital, to City Hospital, Cleveland; Mrs. Lucille Teeple Smith, to Mt. Union College, Alliance, replacing Eleanor Hruby, who has accepted a position at Kent State College; Mrs. H. Marion Smith, Toronto Western Hospital, and Lois Kelly, Beth Israel Hospital, to Cleveland Clinic Hospital; Judith Judd, Boston, to Mt. Sinai Hospital, Cleveland; June Mellinger, St. Mary's Hospital, Rochester, Minn., to Mt. Carmel Hospital, Columbus; Mrs. Gladys Wager, Friend's University, Wichita, Kans., to Children's Hospital, Columbus; Margene Anderson, to Department of Surgical Research, Ohio State University; Marie Dohm, State Department of Health, Chicago, to Cleveland Health Council as director of Nutrition Service.

Jane Diehm, Cleveland Health Council, as chairman of the state committee on Community Nutrition, reports that her committee has been very active in distributing tray leaflets in various hospitals throughout the state. Educational posters have also been displayed in outpatient clinics, cafeterias, and other public places.

Jean Landefeld, head dietitian, City Hospital, Akron, addressed members of Moosa Lodge on the subject of The Balanced Diet During Food Rationing, April 16.

Mary Lum, graduate of the University of Hawaii, who took her student training and received the master's degree at Ohio State University during the past year, has accepted a position as dietitian at Kapiolani Hospital, Honolulu.

Charlotte Stidham, University Hospitals, is doing graduate work at Western Reserve University for her master's degree. She is also working at the Thompson Aircraft Products Company on a special problem.

Newcomers to the staff of University Hospitals include Shirley Schraub, Iowa State College, as assistant dietitian on therapeutic relief; Nancy Yarber, University of Louisville, and Betty Couch, University of Oklahoma, as assistants on vacation relief; Betty Fry, Murray College, as member of the teaching staff; Virginia Swift, University of Connecticut, assistant dietitian in the clinics.

Captain and Mrs. Hopkins (Thelma Glazier, formerly of University Hospitals) have announced the birth of a second son, David Franklin, March 17. Captain Hopkins is stationed at Scott Field, Ill.

News From Advertisers and Exhibitors. The National Dairy Council, 111 N. Canal St., Chicago 6, issued in March a booklet of statistical information regarding the dairy products situation, including government food distribution orders and information concerning prospects for dairy supplies in the coming months. Statistics concerning milk and cream consumption in the United States show that approximately .52 qt. per capita per day were consumed in 1944, as compared with .42 qt. in 1935–39, while the consumption of all dairy products in terms of milk equivalent was approximately 361 qt. as compared with 375 qt. in 1935–39. Butter consumption in 1944 was about 12 lb. per capita as compared with 17.1 lb. in 1935–39, and 15.8 in 1942. Ice cream consumed in 1944 was approximately 9 qt., compared with 12.2 in 1942 and 8.1 in 1935–39. According to figures compiled by A.H.E.A., quoted in the *Journal of Home Economics*, dairy products contribute the following, in terms of percentage, to the civilian food supply: food energy 17%, protein 24%, calcium 78%, riboflavin 48%, fat 27%, vitamin A 27%, and phosphorus 39%.

Toastmaster Products Division of the McGraw Electric Company, Elgin, Ill., has received for the third time the Army-Navy "E" award of excellence. Since before Pearl Harbor the organization has devoted its entire facilities and technical skill to war production under contracts with the Bureau of Ordnance, Navy Department, specializing in the manufacture of anti-aircraft ammunition components widely used by the Navy's rapidly expanding fleet of aircraft carriers, cruisers, and transport ships.

Mead Johnson & Company, Evansville, Ind., suggests that a happy solution to the problem of providing a nourishing breakfast for the school child is Pablum, which furnishes protective factors, especially calcium, iron, and the vitamin B complex. The ease with which this breakfast cereal can be prepared is an important factor in enlisting the mother's cooperation in serving a nutritious breakfast.

Bulletin No. 82 of Marie Gifford's *Kitchen Service*, Armour and Company, Union Stock Yards, Chicago, offers further suggestions in the never-ending puzzle of meat s-t-r-e-t-c-h-i-n-g. The life-saving ground meat entrée, leftover lamb, beef, or veal, beef scallopine, and curried lamb shanks on rice are recommended, and asparagus tips cooked with veal loaf and sausage stuffed peppers sound appetizing for the summer luncheon menu. Leaflets may be obtained on request.

Mary Pearl, home economist for Maltex Company, Burlington, Vt., writes to remind us that jobbers once again have Maltex Cereal in cases of eighteen 22-oz. packages, or in well-constructed 100-lb. bags.

The National Live Stock and Meat Board, 407 S. Dearborn St., Chicago 5, has prepared a 19 by 28½-in. chart entitled "The Foods You Need Every Day" for inclusion in the Elementary School Nutrition Teaching Kit. A teaching outline is given on the reverse side concerning other charts such as "The Foods I Eat" which provides space for the record of a week's diet for each member of the class.

The history of cereal grains is interestingly presented via story and sketch in a booklet prepared by General Mills, Inc., Minneapolis. The cultivation of the grains in prehistoric times, the arts of ancient milling and bread-making, the source of origin of the various grains and a complete description of each will be found in this attractive compilation, which may be obtained upon request. Also prepared for distribution is a folder giving the results of a survey on the breakfast question.

The General Electric Company has announced the establishment of an air conditioning department at its Bloomfield, N. J. headquarters. The new department will select and utilize appropriate marketing channels and methods for all of its products except air conditioning for rail transportation.

An announcement from Grocery Store Products Sales Company, Inc. suggests "wiping" a roast with Kitchen Bouquet before cooking it in a slow oven, in order to enhance the table appeal by the resulting rich brown crust.

The Home Economics Department of the Cereal Institute, Inc., 135 S. LaSalle Street, Chicago 3, Agnes G. Reasor, director, has prepared a booklet of suggestions for incorporating cereal products in meals throughout the day and in between-meal snacks. Recipes include breads, cakes, cookies, desserts, and candy.

The April issue of *Kitchen Chatter*, prepared by Mary Hale Martin, Libby, McNeill and Libby, Chicago 9, is devoted to the preparation of salads, with recipes arranged in chart form according to the most important ingredient.

Single Service News, published by the Public Health Committee, Paper Cup and Container Institute, 1790 Broadway, New York 19, offers a new service to readers. Attractive food models representing individual portions of appetizing entrées, salads, vegetables, fruits, and puddings in paper cups and containers are obtainable at a discount from the institute. Models include: baked apple, raw vegetable salad, beef and vegetable stew, cooked apricots, baked custard, baked beans, cooked green peas, pat of butter, raw fruit salad, and spaghetti and meat balls.